

## **Bovine Papular Stomatitis**

Muzzle **redness**

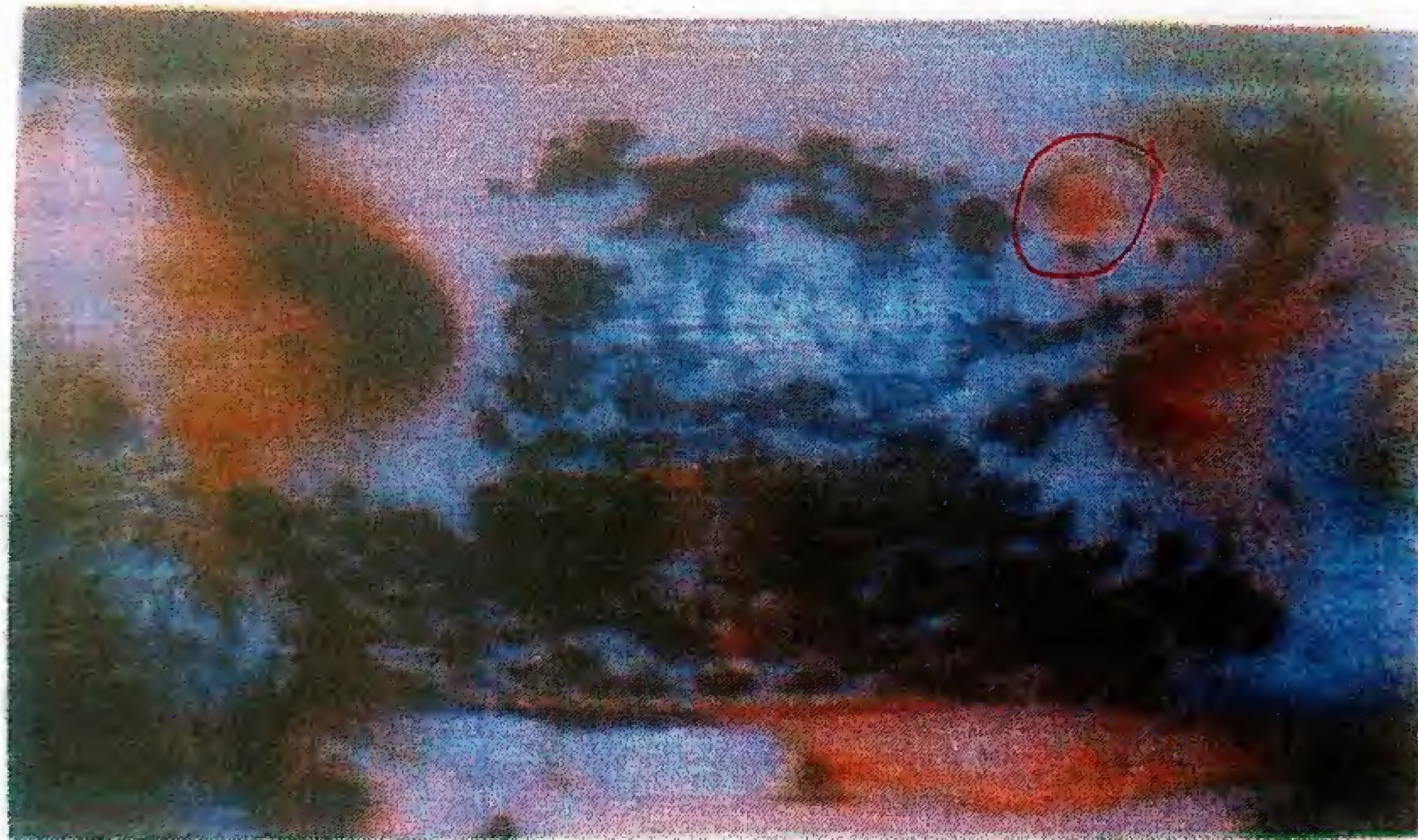
Lips, mouth **stomatitis (vesicles, erosions)**

Oesophagus **vesicles, erosions**

Forestomach **vesicles, erosions**



01



Bovine papular stomatitis  
lesion on the muzzle





**Bovine papular stomatitis  
lesion on the gums**





**Bovine papular stomatitis**  
**lesions on the dental pad and hard palate**



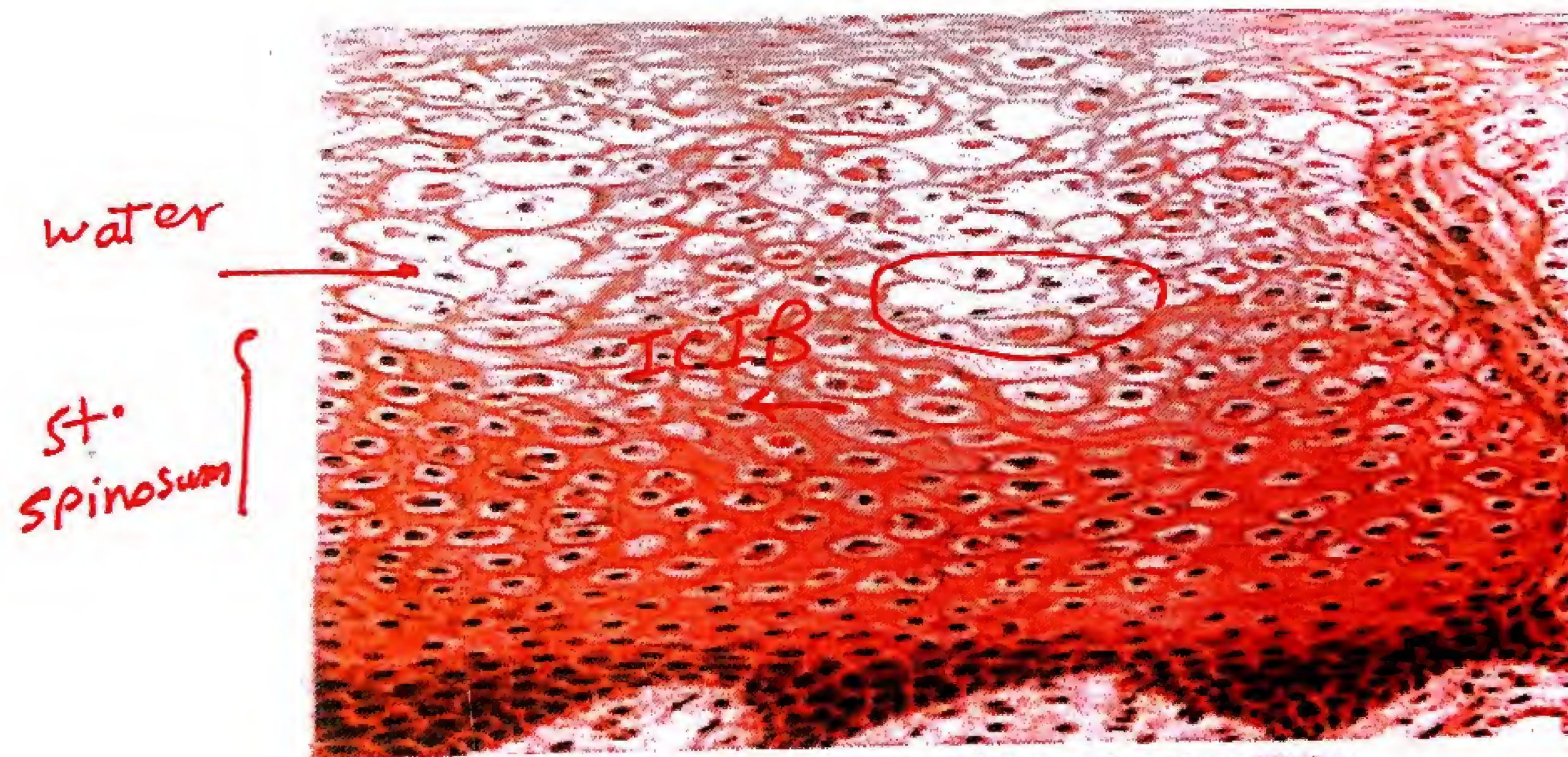


water

st.  
spinosum

Bovine papular stomatitis  
lesions on the dental pad



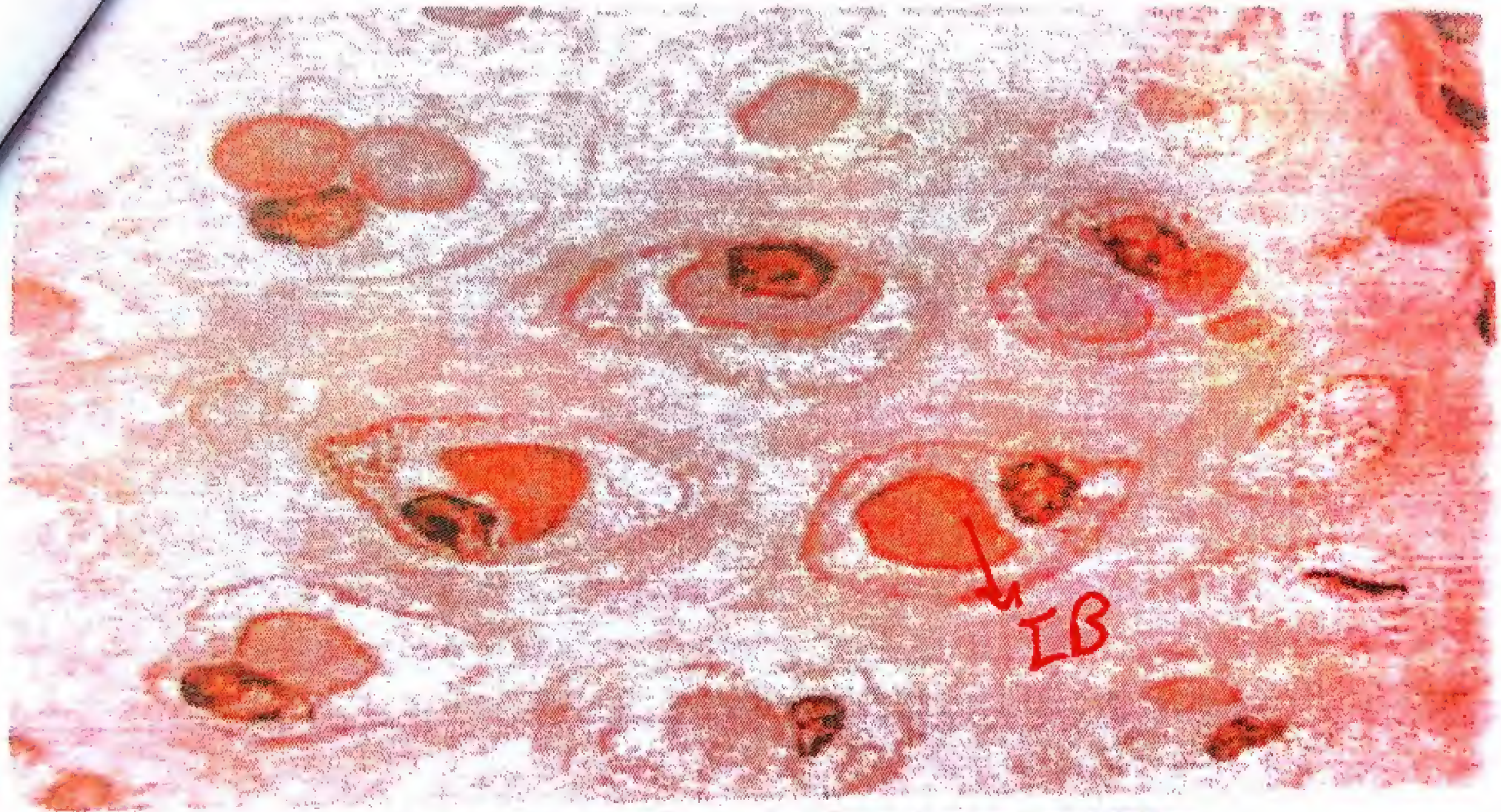


### Bovine papular stomatitis

Lip : hydropic degeneration and swelling of cells in str. spinosum at the beginning of vesicle formation

Inclusion bodies are seen intracytoplasmic





**Bovine papular stomatitis**  
**Intracytoplasmic inclusion bodies**  
**in cells of str.spinosum of stratified**  
**squamous epithelium of the lip**



الطاعون البشري

## Cattle plague Rinderpest

Tongue: erosions/ulcers

Mouth: necrotic stomatitis (ulcers)

Oesophagus: ulcers

Forestomach: ulcers

Abomasum: ulcers

Small intestine: ulcers, haemorrhagic enteritis

Large intestine: congestion / zebra stripings

Urinary bladder: ulcers

Kidney: congestion

Eye: conjunctivitis / corneal opacity

Spleen: petechial haemorrhages subcapsular

Lymph nodes: shrinkage / necrotic changes





**Cattle plague (Rinderpest)**

**It is a severe contagious disease in which mortality  
may reach 100 %**

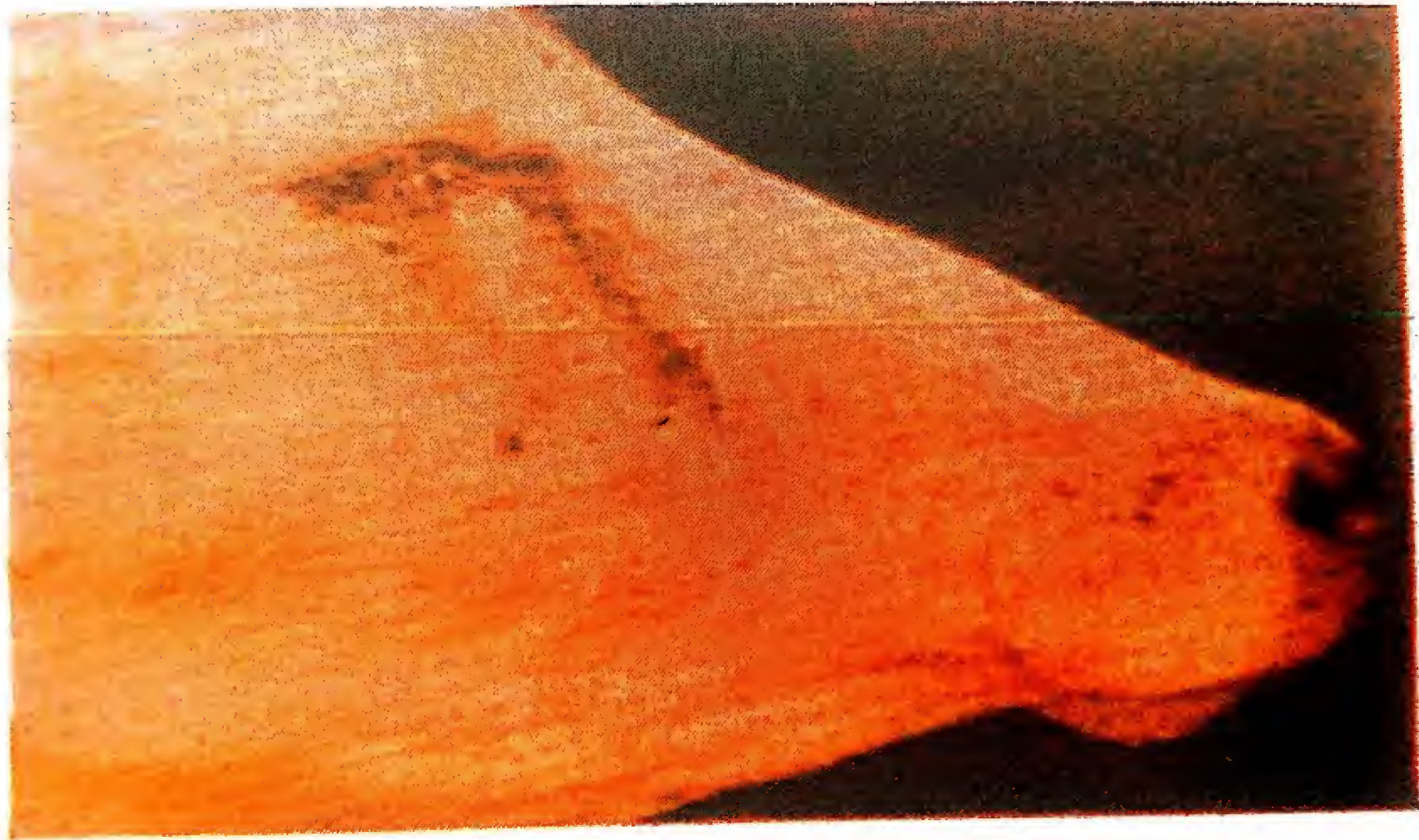




Cattle plague

mortality may reach 100 %





Cattle plague  
increased lacrimation in an affected cow

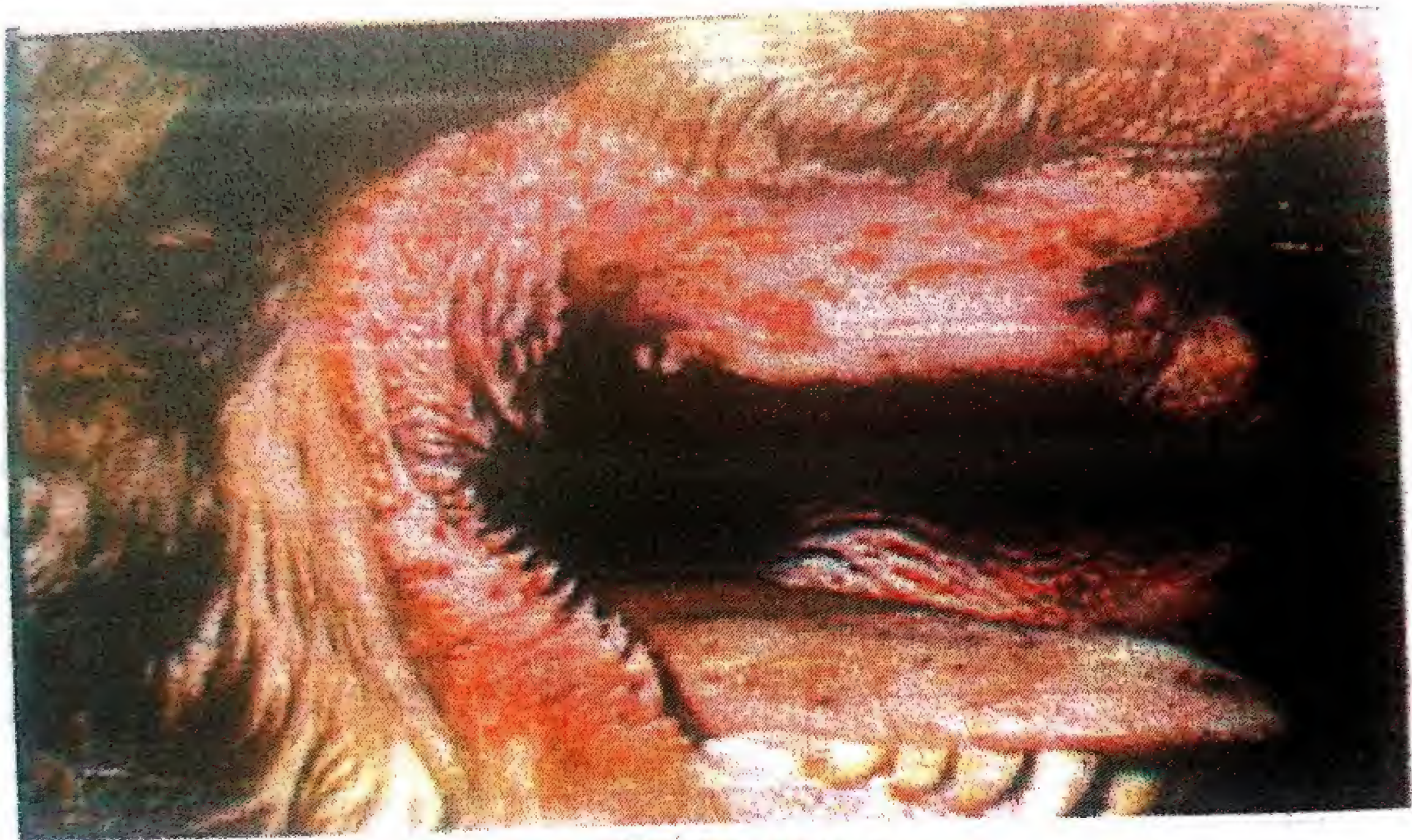




Cattle plague  
erosions on the dental pad and hard palate







### Cattle plague

erosions on the gums of an affected cow





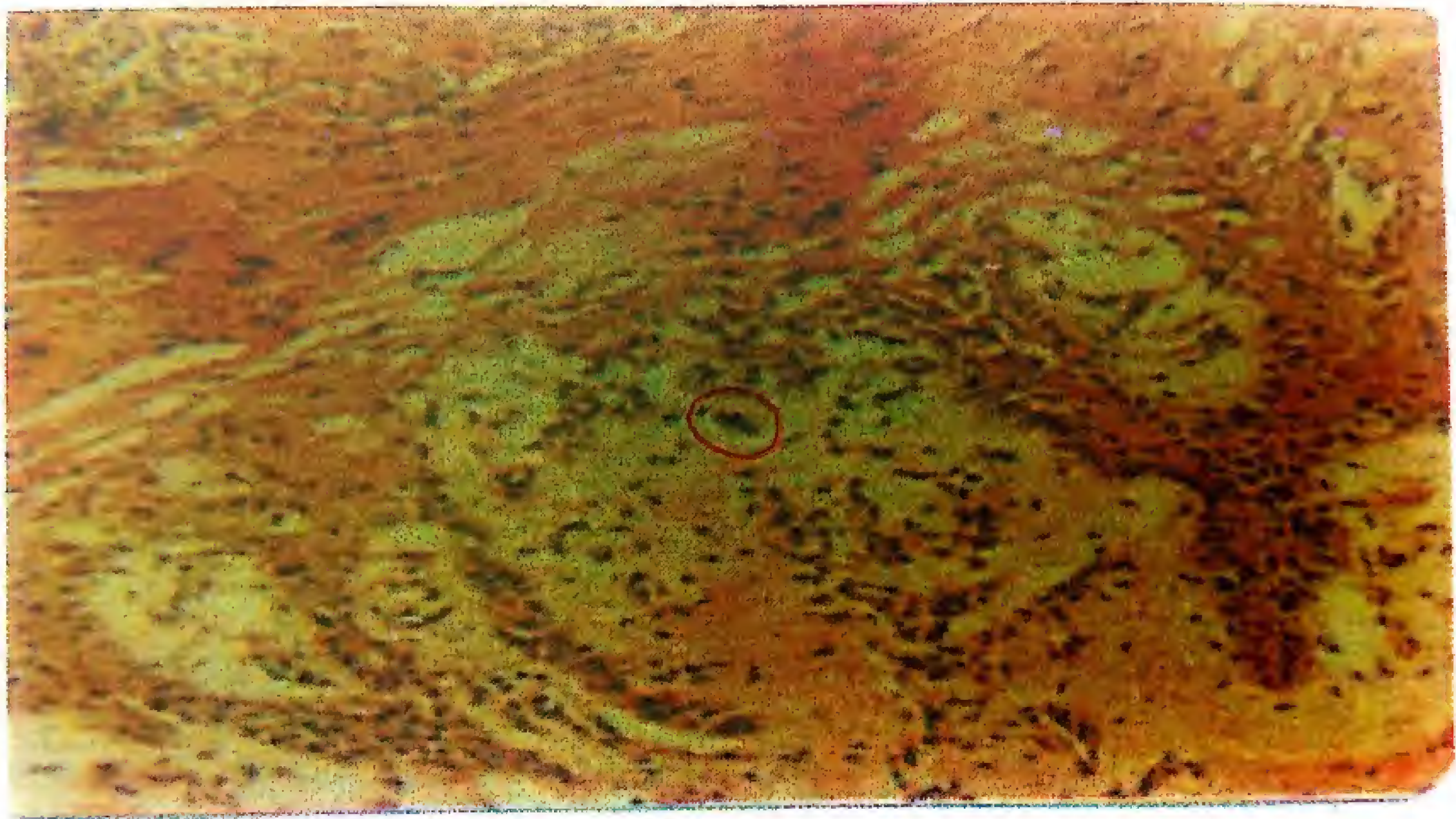


### Cattle plague

congestion and reddening of the root of the teeth  
and erosions of the lower gum







### Cattle plague

Cheek : cells of stratum spinosum undergo coagulative necrosis  
neutrophils infiltrate the mucosa  
(giant cells and intracytoplasmic inclusions may be present)



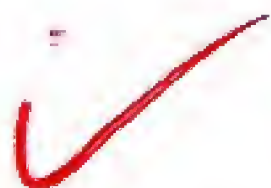




### Cattle plague

Tongue : necrotic stomatitis

regenerating granulation tissue in the mucous membrane - damage of the cells of stratum germinativum - chronic inflammation of the submucosa



Coagulative necrosis





Cattle plague

Lymph node: enlargement and edema







Cattle plague

Abomasum (fundic portion) : congestion and  
haemorrhage





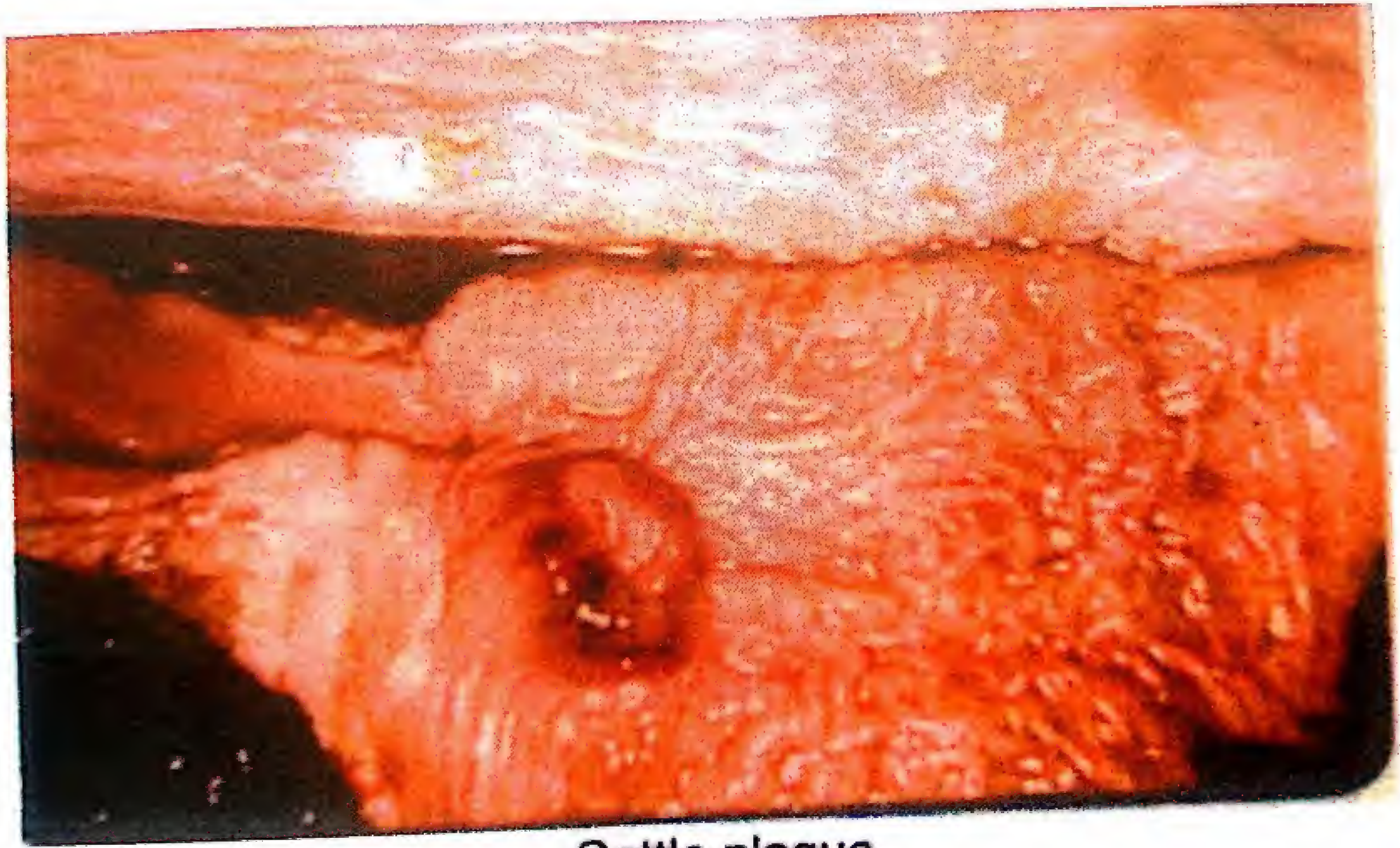


Cattle plague

Lung: severe congestion of the anterior lobes



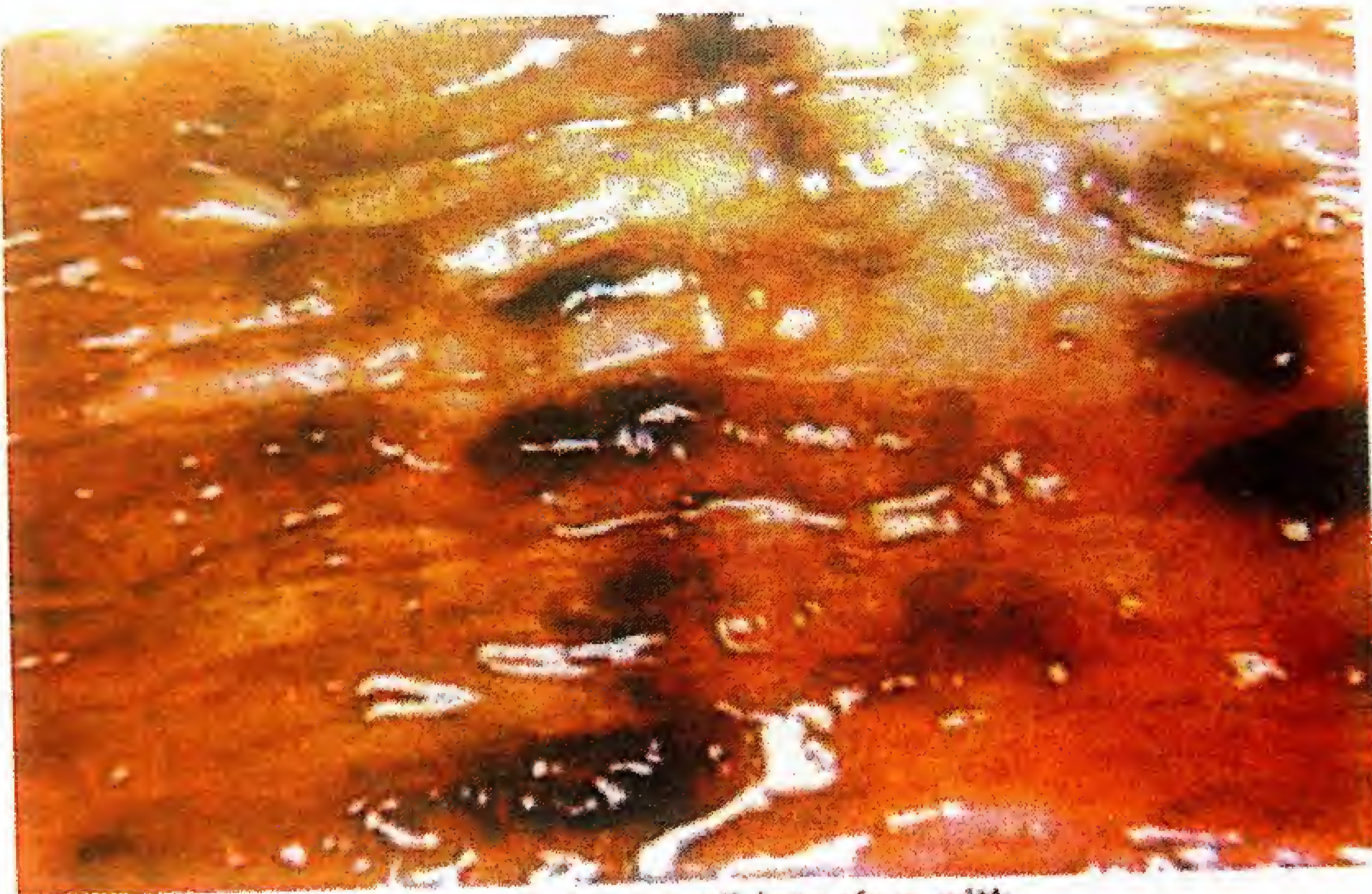




Cattle plague  
congestion of the ileocecal valve







13 Close-up of an area of the small intestine with hemorrhage and erosions (RP).







Cattle plague  
"Zebra-stripping " in the distal colon and rectum







Cattle plague

Intestine: severe congestion and haemorrhage

✓

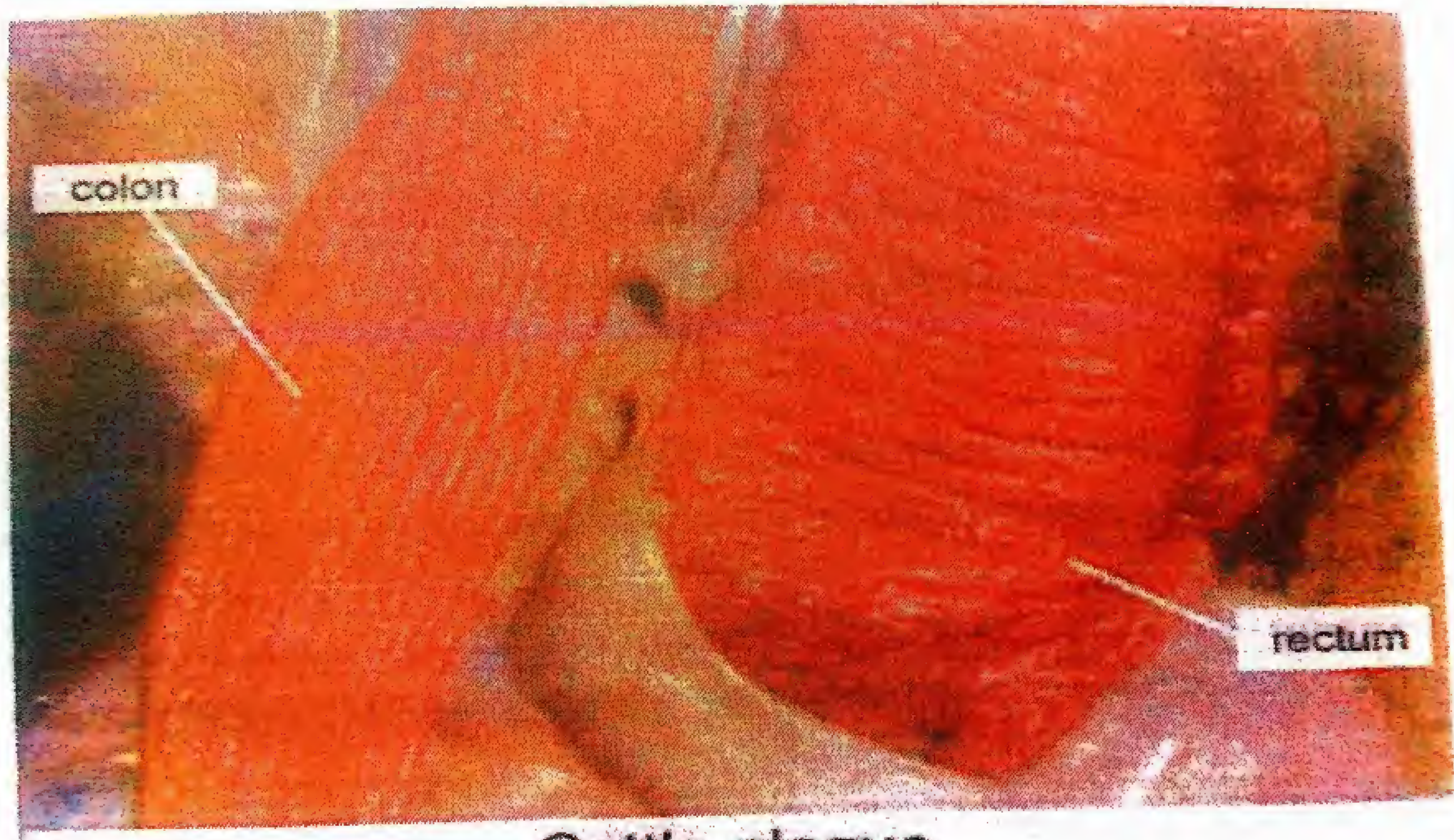




## Cattle plague

Intestine (ileocecal valve) : severe haemorrhagic inflammation and thickening of the mucosa



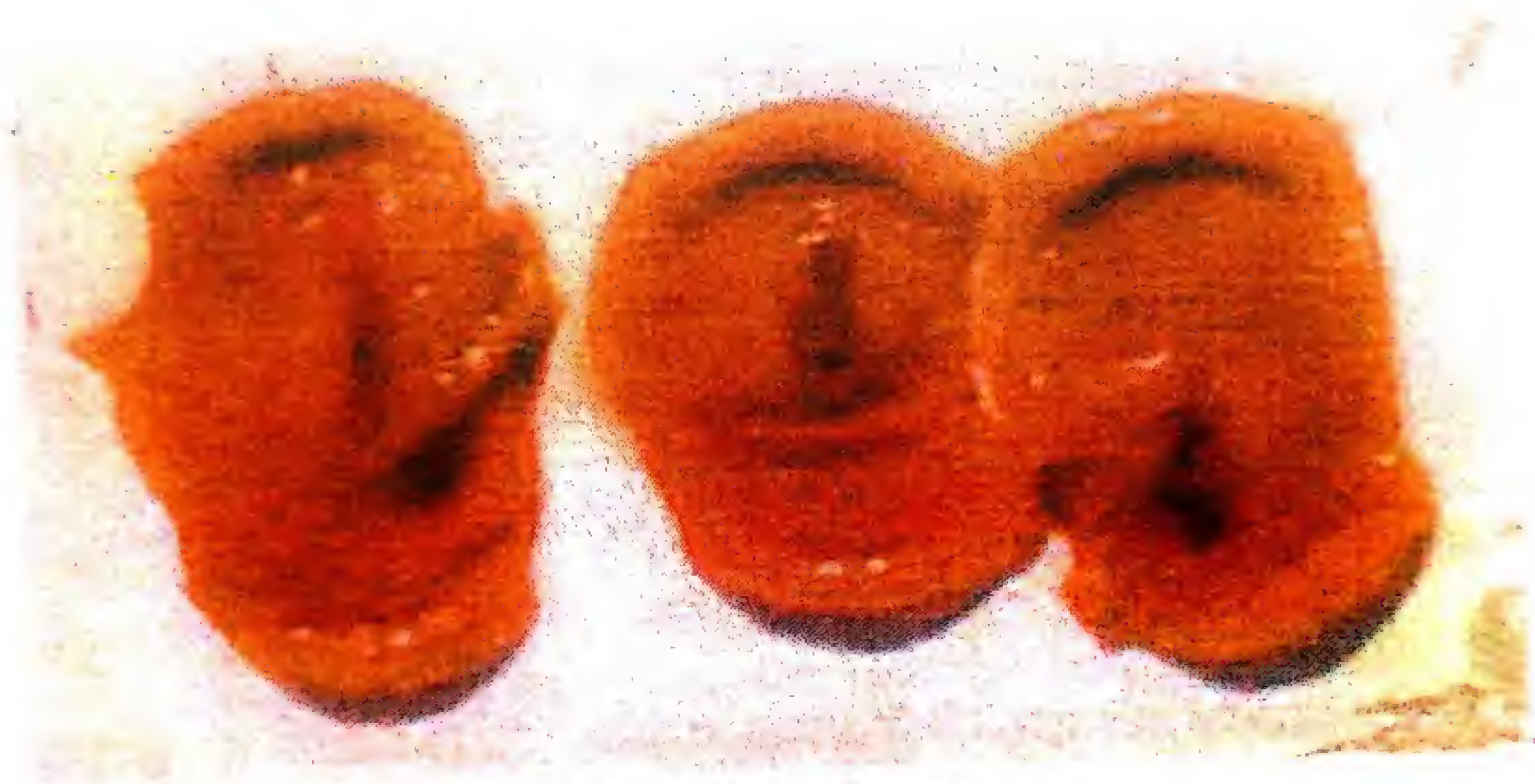


## Cattle plague

Haemorrhagic enteritis: the crests of longitudinal folds of the colon and transverse folds of the rectum show bright red haemorrhagic strippings (zebra markings)







### Cattle plague

Small intestine: the mucosa above the area of Peyer's patches is necrotic and the epithelium undergo sloughing leading to the formation of ulcers







## Cattle plague

Small intestine: haemorrhagic enteritis (the intestinal wall is thickened and intensively reddened or tinged with blood)





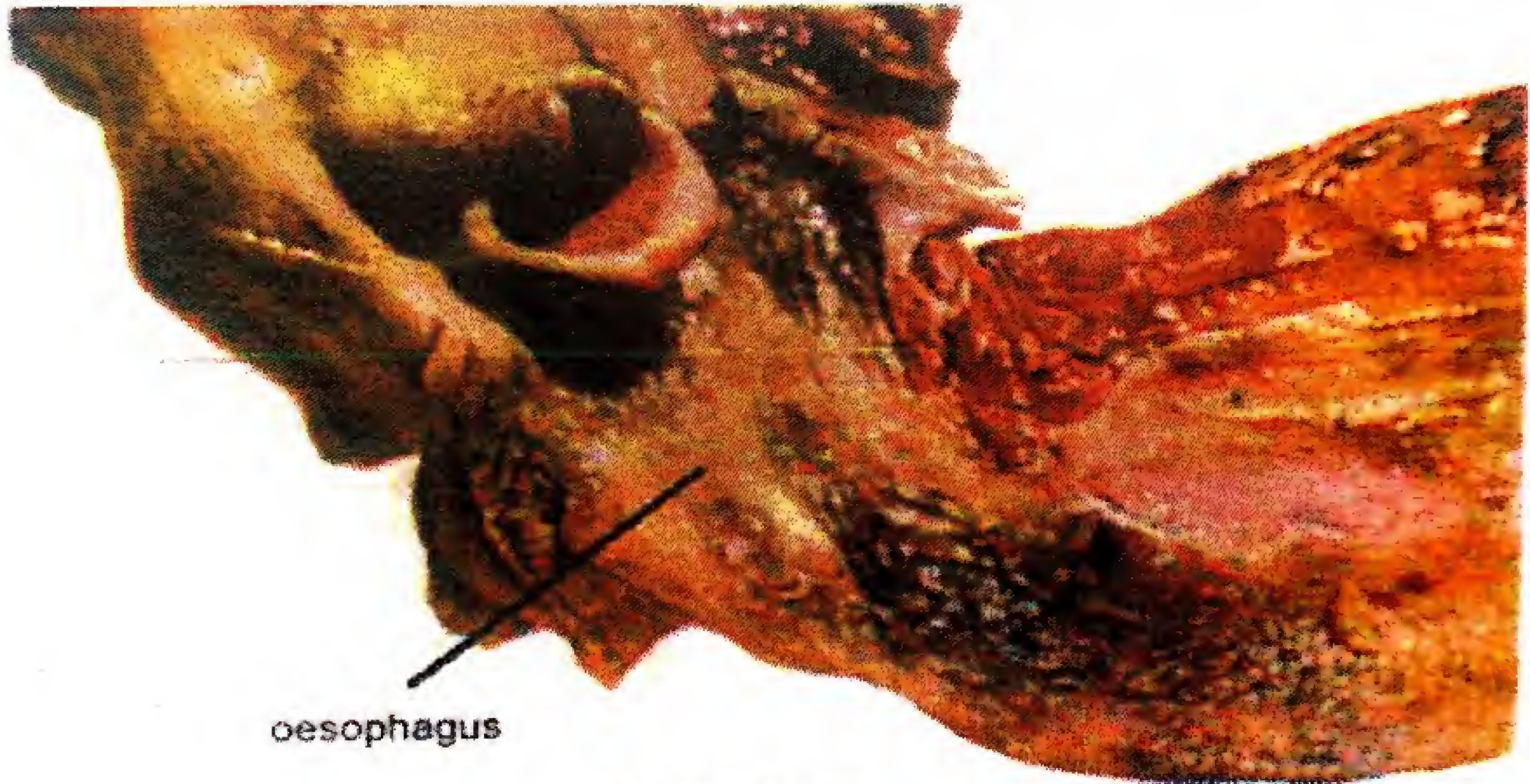


**Cattle plague**

severe congestion of the small intestine and  
ileocecal valve







oesophagus

Cattle plague

✓ Oesophagus : severe infection with focal yellowish-white necrotic areas on the mucosa



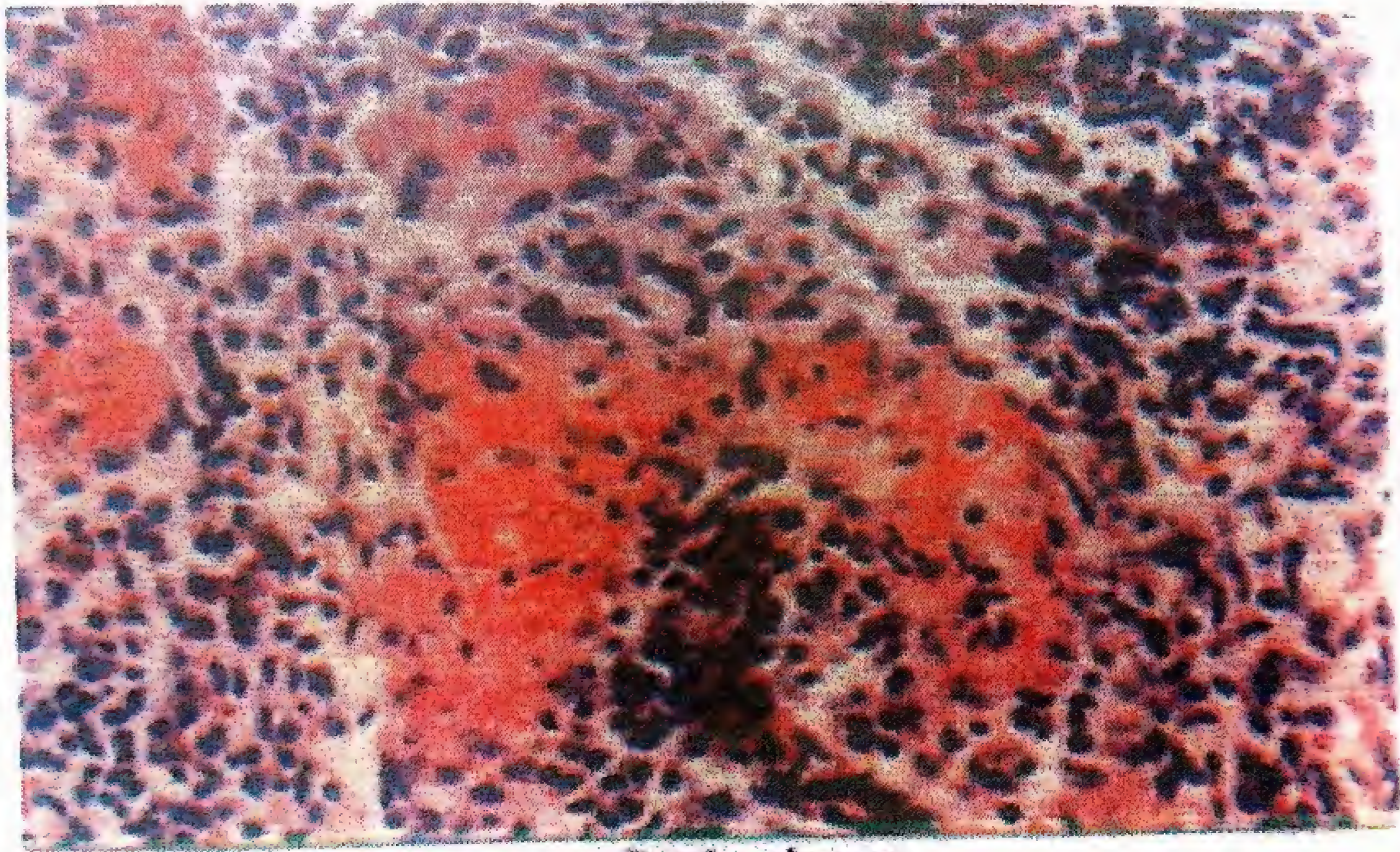


### Cattle plague

Necrotic glossitis in the tongue  
pin-headed foci on the dorsum of the tongue giving  
the appearance as if the organ being sprinkled with bran-mash





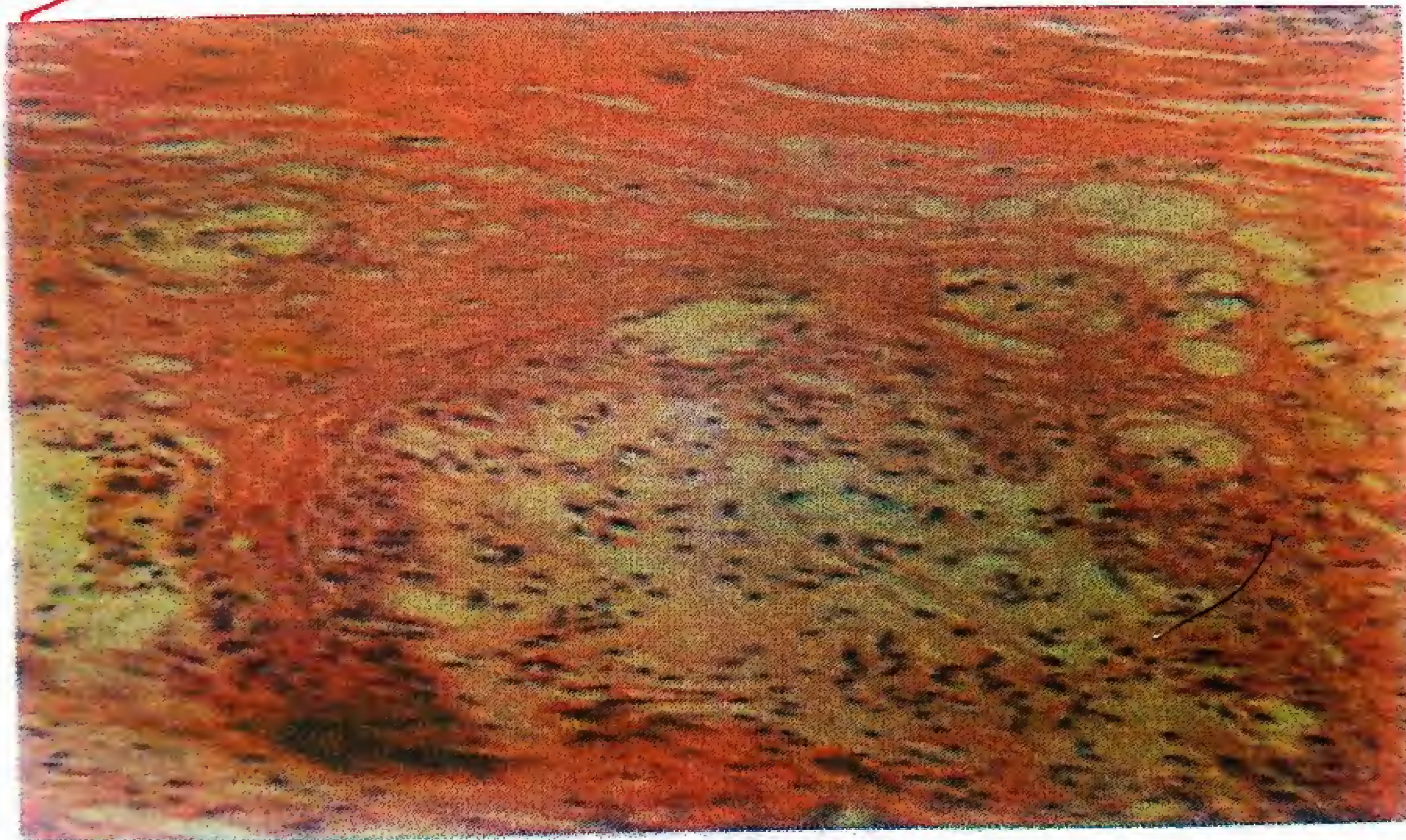


### Cattle plague

Lymph node: destruction and disappearance of lymphocytic elements (lymphoblasts and lymphocytes) leaving eosinophilic reticulum



Micrograph



### Cattle plague

Lip: degeneration and vacuolation of cells of prickle cell layer may occur at an early stage followed by necrosis

✓



## **Vesicular Stomatitis**

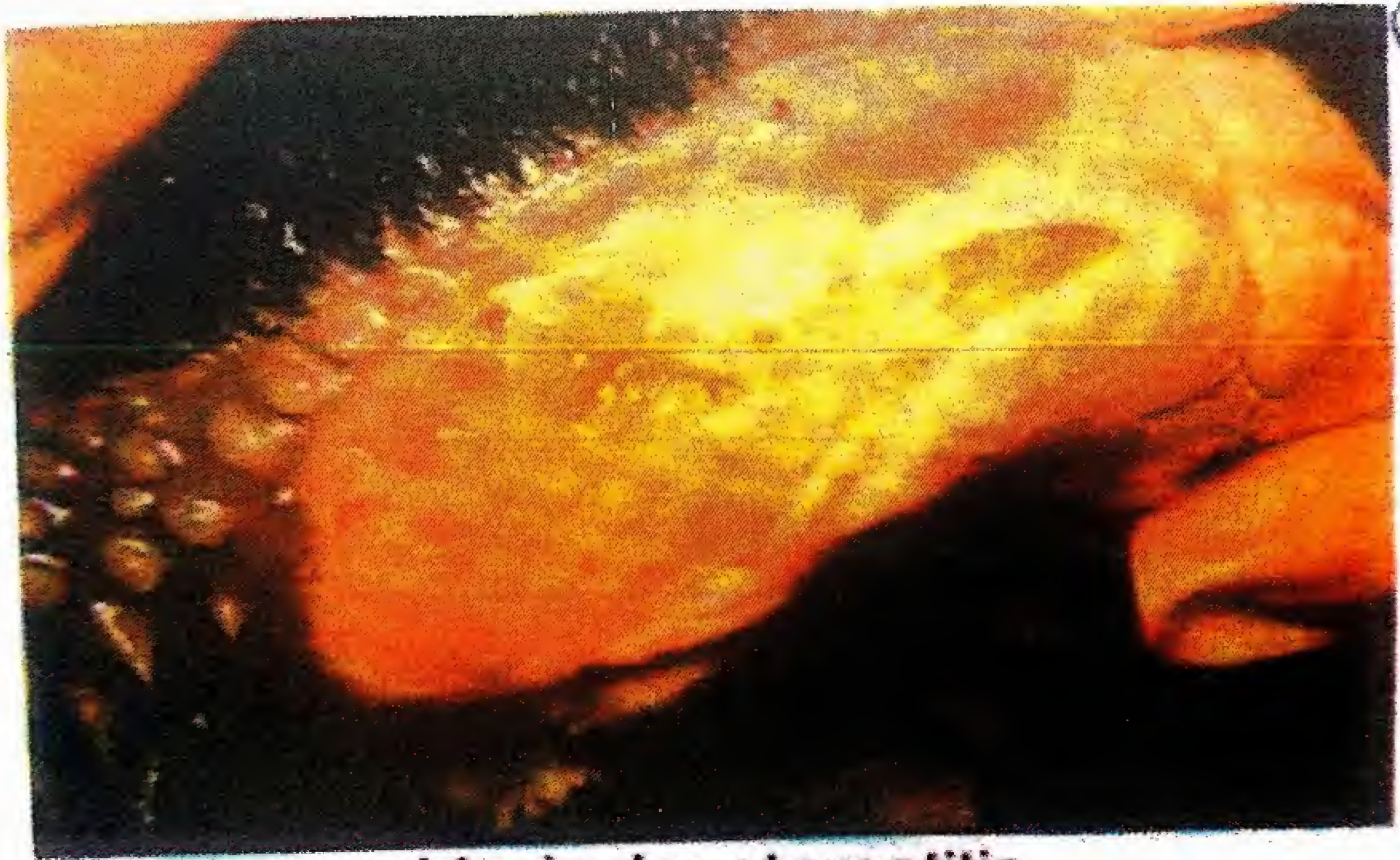
**Mouth : vesicles / erosions**

**Tongue : vesicles / erosions**

**Feet : vesicles / erosions rarely**

**Brain : encephalomyelitis rarely**





**Vesicular stomatitis**  
Tongue: ruptured vesicles



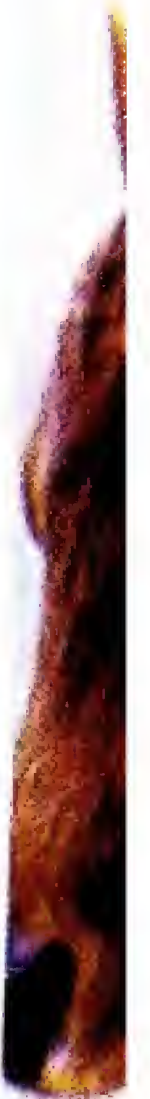


**Vesicular stomatitis**  
**Lesions on the rugae of the hard palate**



# Lumpy skin disease

- Calf showing Various sized cutaneous nodules in a severe case of lumpy skin disease









# Lumpy skin disease

- Enlarged prefemoral Lnn







## Lumpy skin disease

- Ulceration due to sloughing of the necrotic nodules with hemorrhagic exudate were seen.







## Lumpy skin disease

- Lung showing pale grayish f necroticoci







# Lumpy skin disease

Cut surface of the nodules in the  
parenchyma of the lung with interlobular  
edema







## Lumpy skin disease

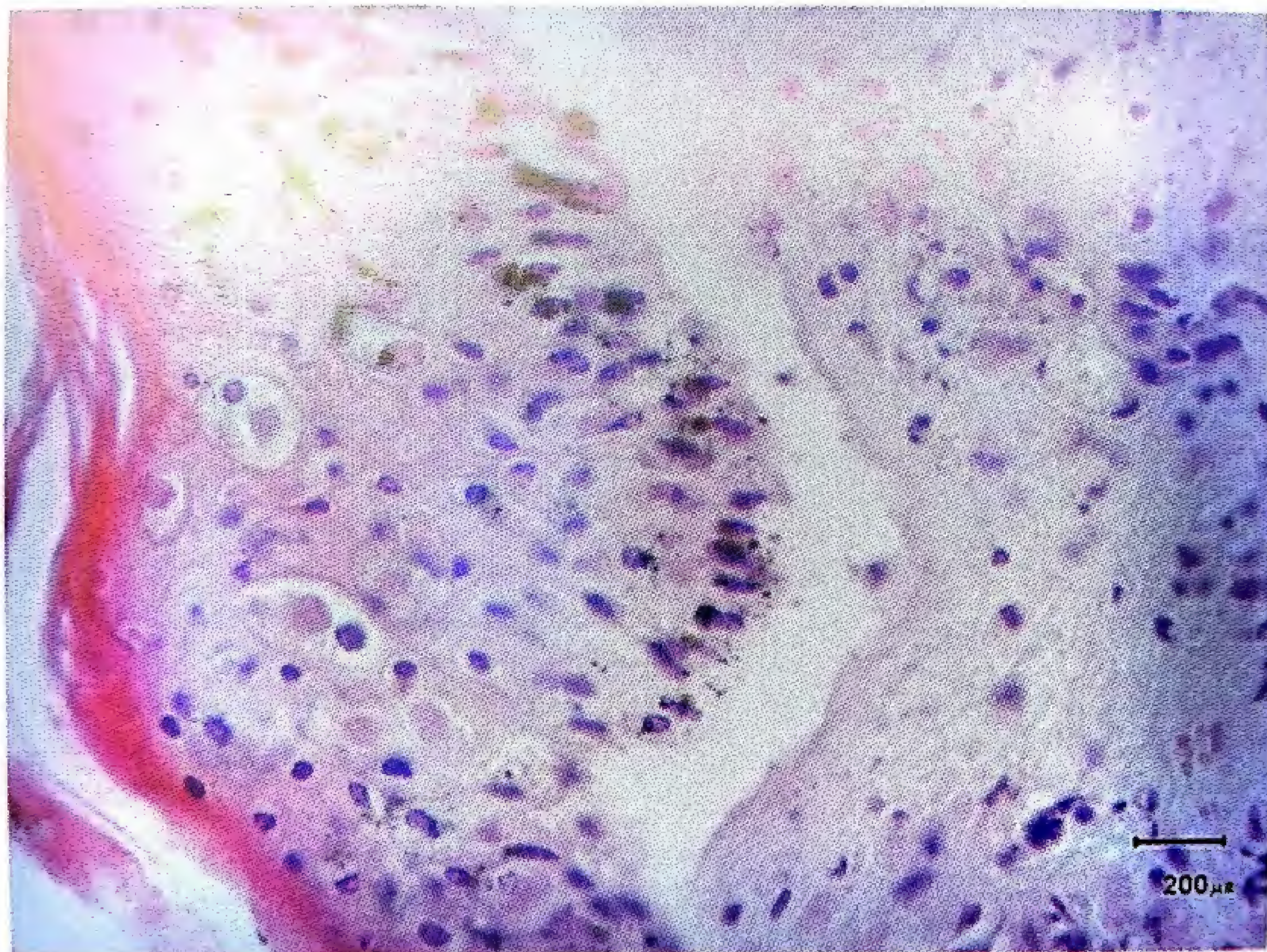
Organ: skin

Stain: H&E

Disease: LSD

Micro: Eosinophilic intracytoplasmic inclusion bodies are seen in the epidermal cells with minimal hydropic degeneration



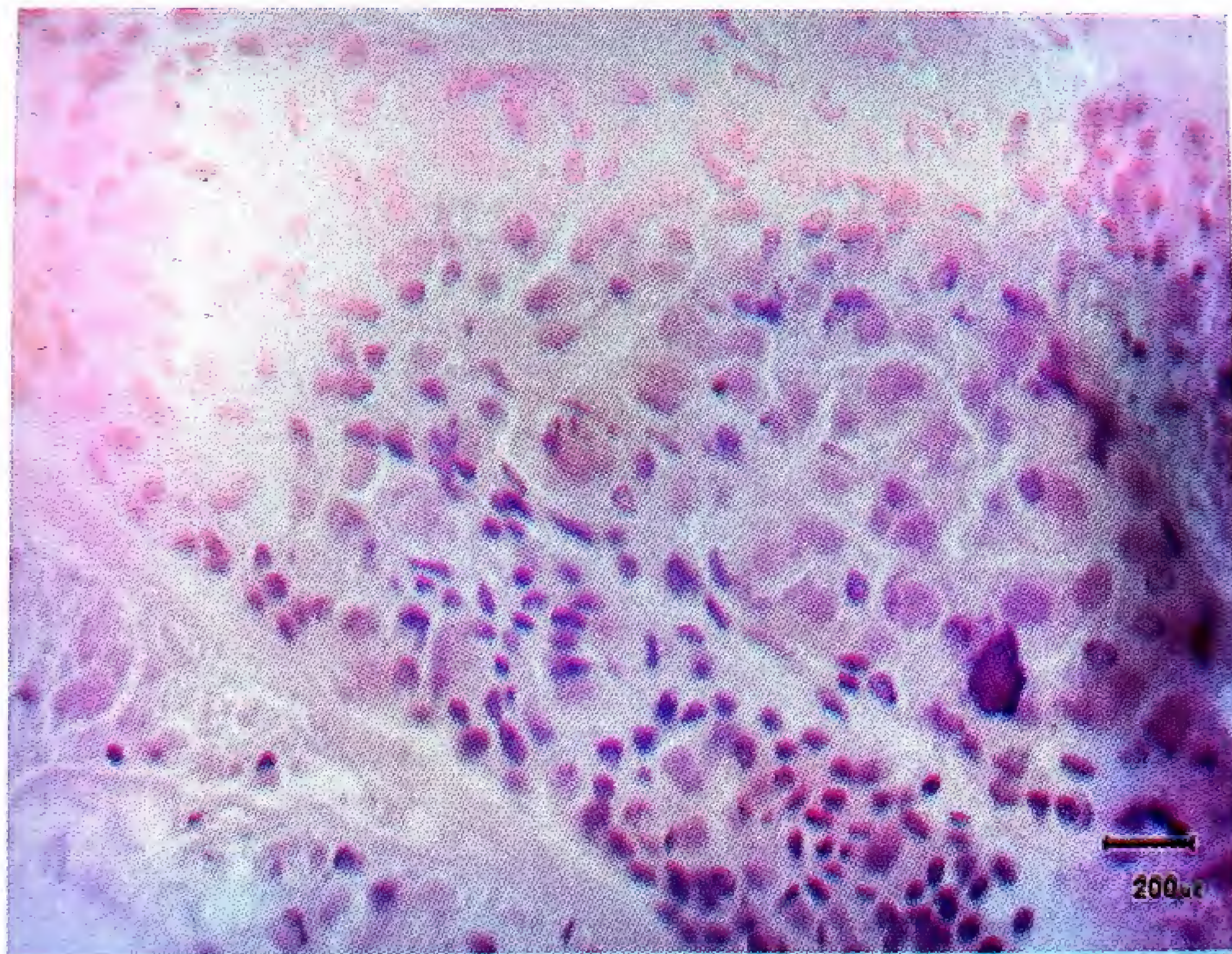




## Lumpy skin disease

- Organ: skin
- Stain: H&E
- Disease: LSD
- Micro: Eosinophilic intracytoplasmic inclusion bodies are seen in the epidermal cells of hair follicle and sebaceous glands



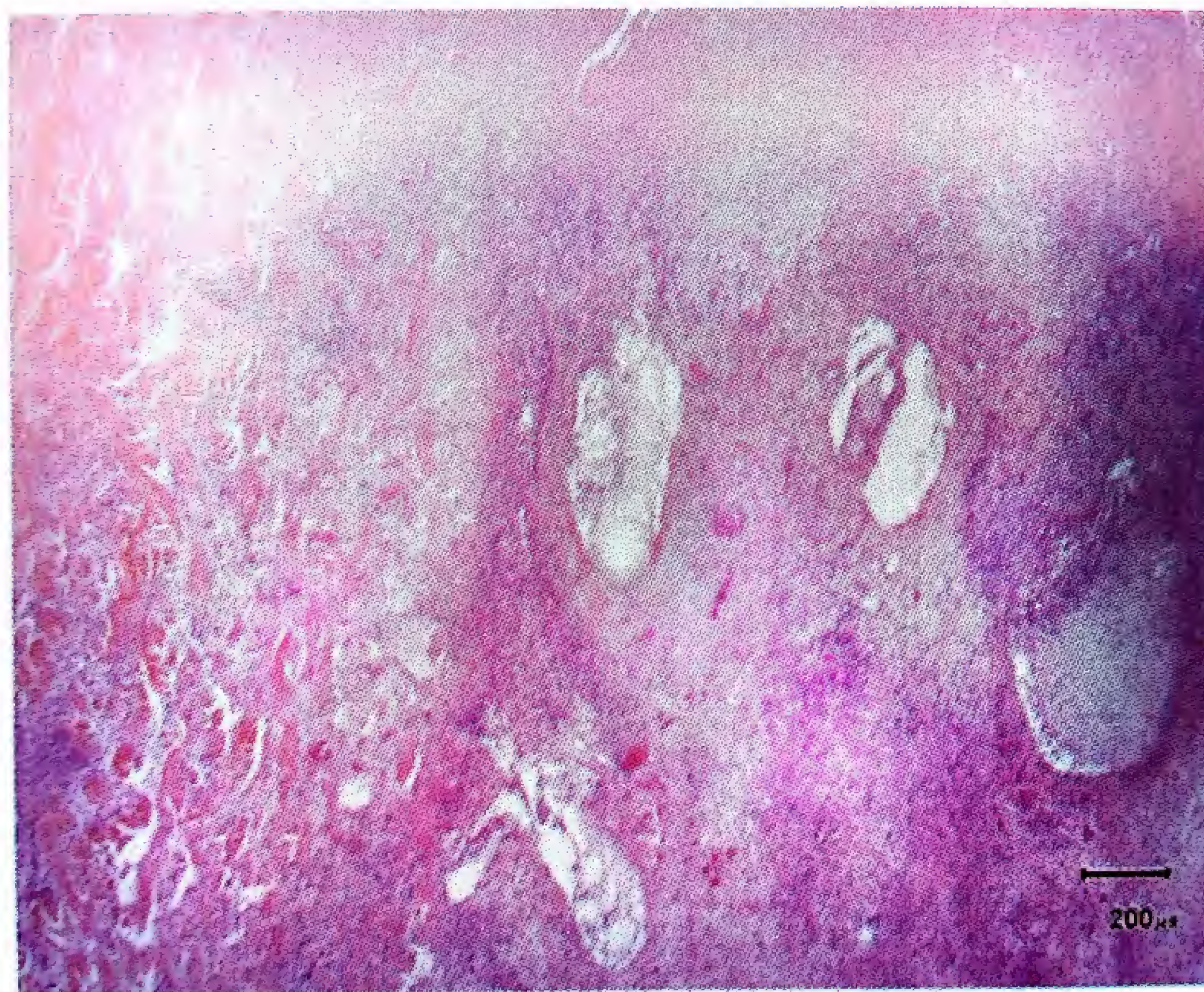




## Lumpy skin disease

- Organ: skin
- Stain: H&E
- Disease: LSD
- Lesion: Vasculitis, thrombosis, edema and necrosis are seen in deep dermis



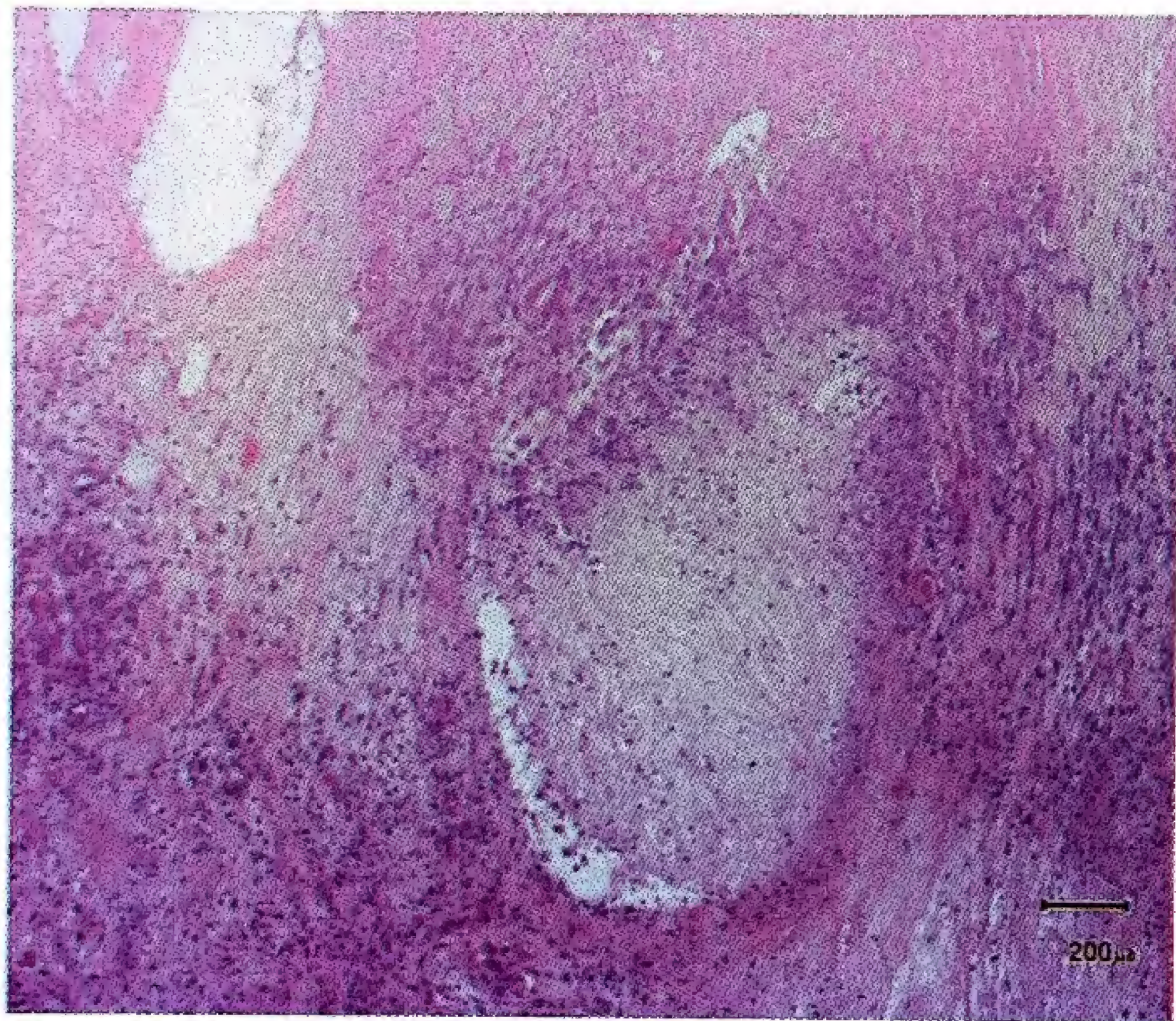




# Lumpy skin disease

- Organ: skin
- Stain: H&E
- Disease: LSD
- Micro: High power to show the thrombosed blood vessel surrounded by neutrophils



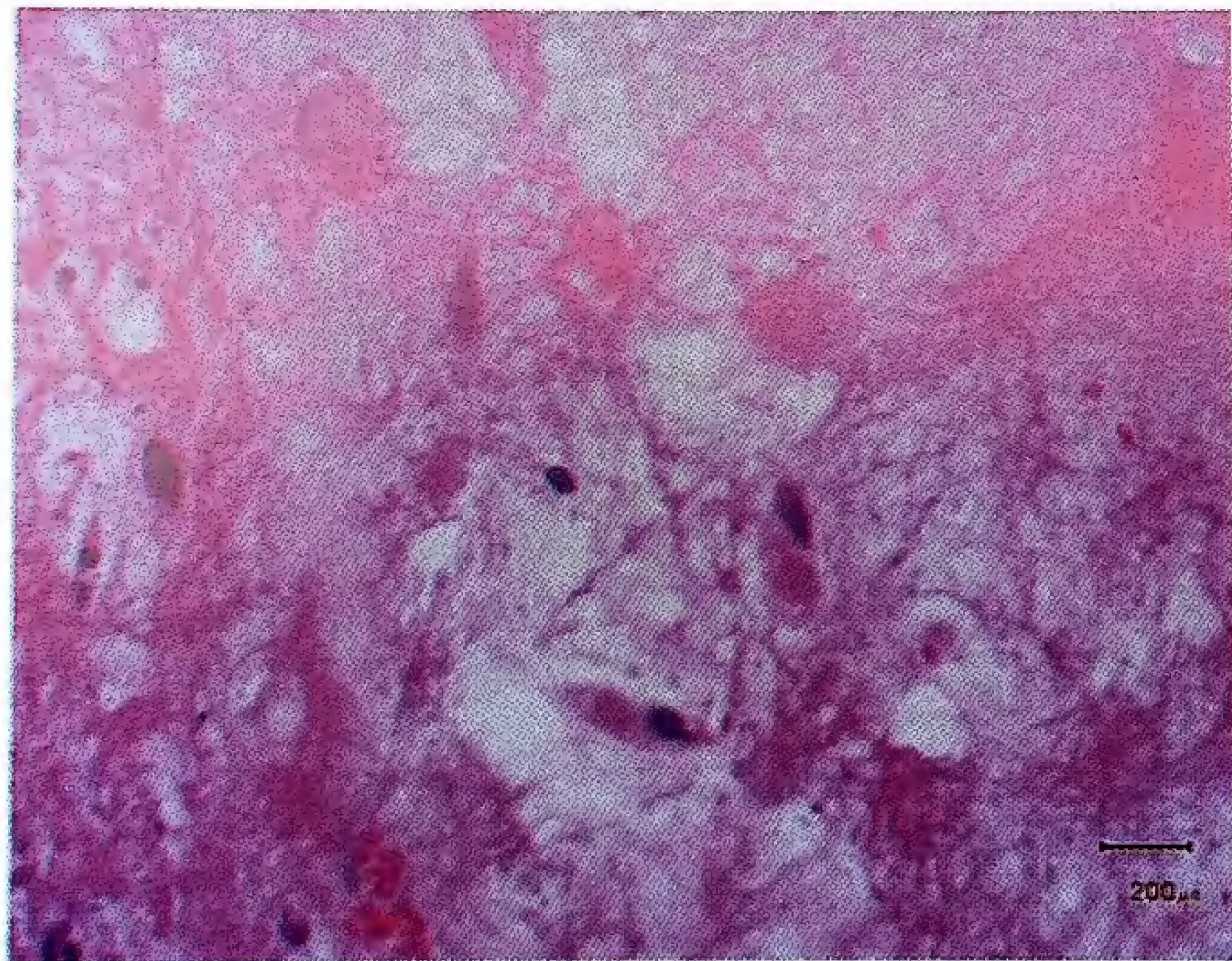




## Lumpy skin disease

- Organ: skin
- Stain: H&E
- Disease: LSD
- Lesion: Eosinophilic intracytoplasmic inclusion bodies are seen in macrophages infiltrating dermis  
ICIB





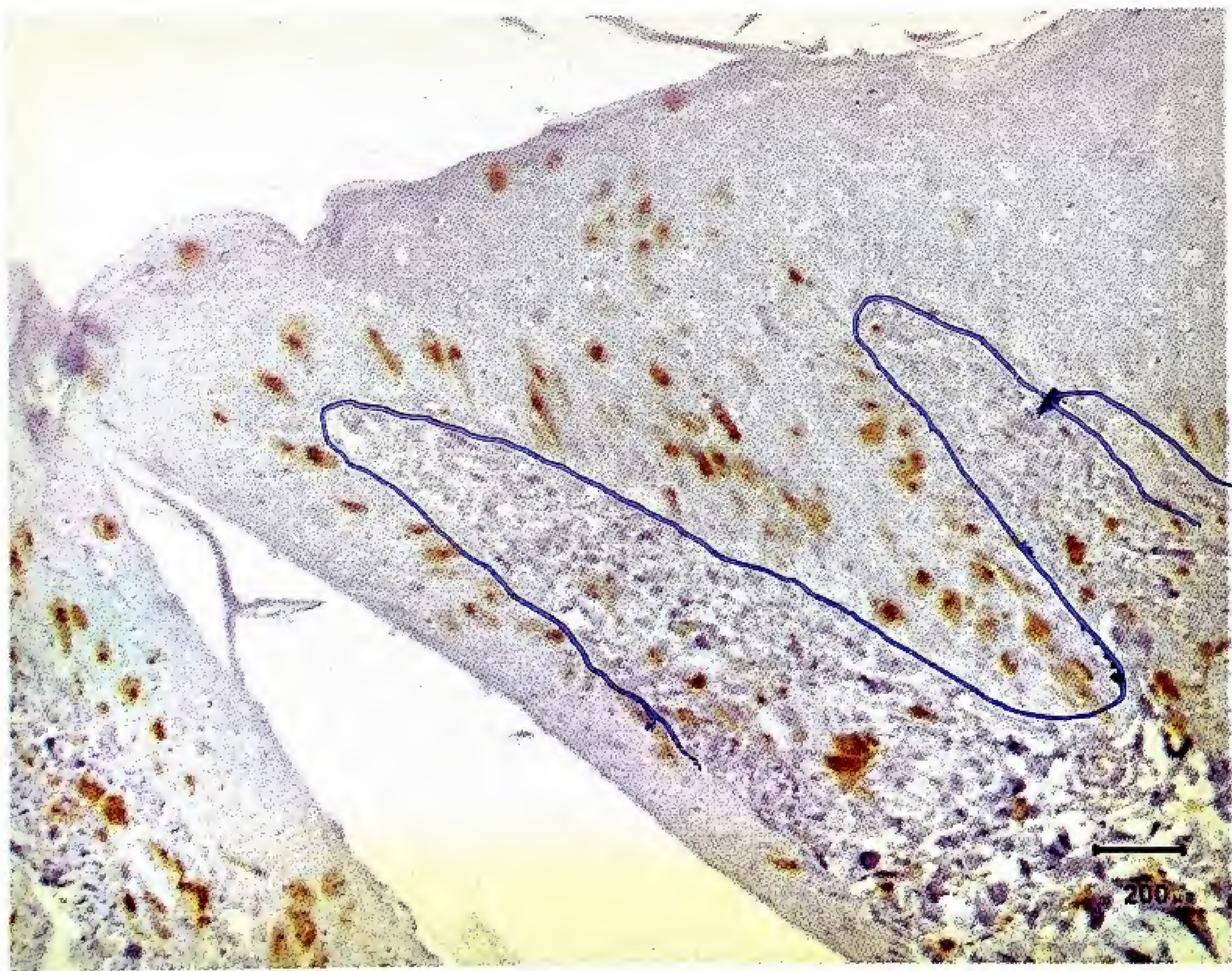


# Lumpy skin disease

- Organ: skin
- Stain: ~~H&E~~ IHC
- Disease: LSD
- Lesion: Positive brown immunolabelling against LSDv are seen in both epidermis and dermis

Immunohistochemistry



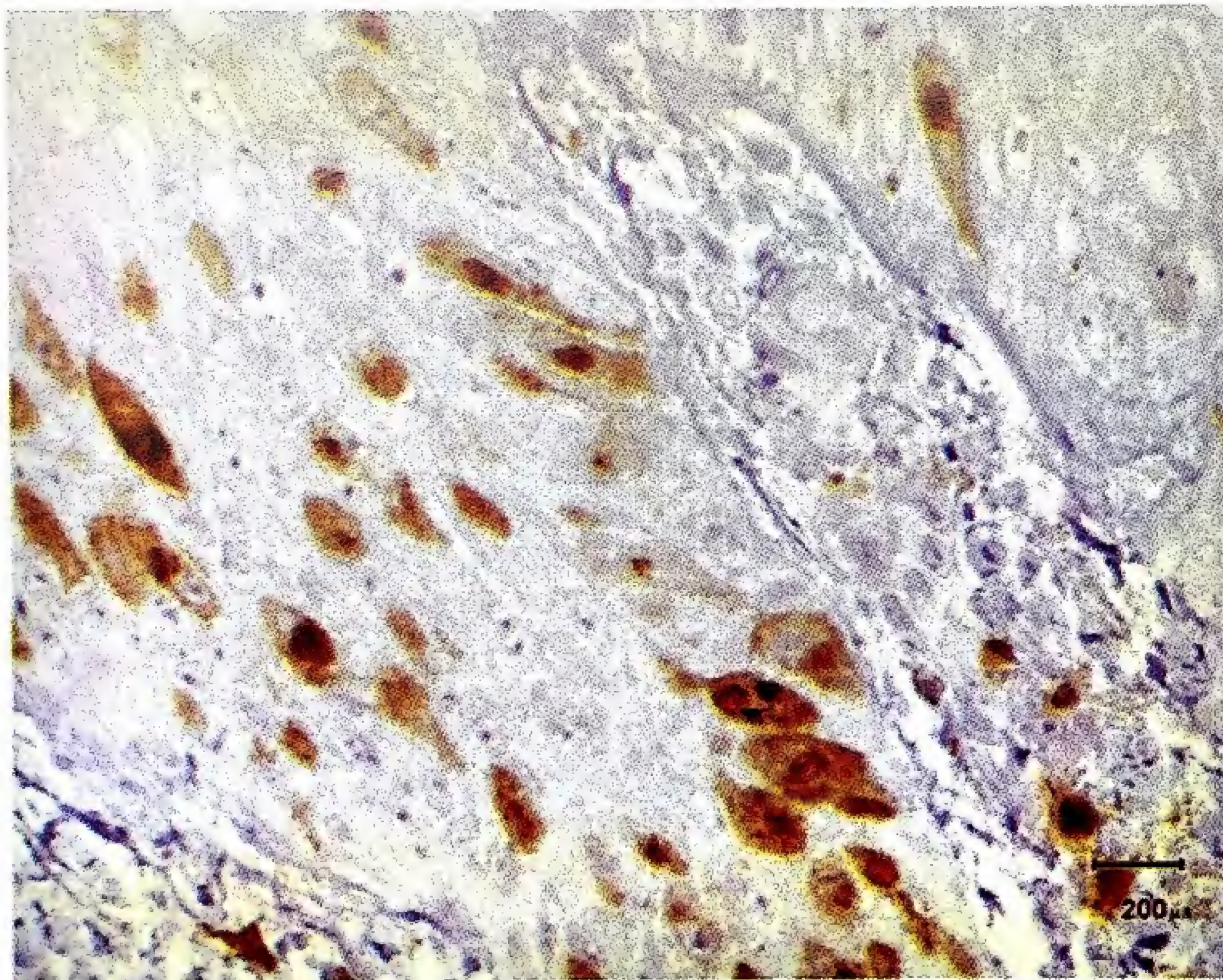




## Lumpy skin disease

- Organ: skin
- Stain: ~~H&E~~ IHC
- Disease: LSD
- Lesion: High power of the previous figure to show positive brown immunolabelling against LSDv are seen in both epidermis and dermis







# Sheep pox

papules and pustules were seen  
on the muzzle and lips







# Sheep pox

- Reddish to whitish nodules & papules in the lungs



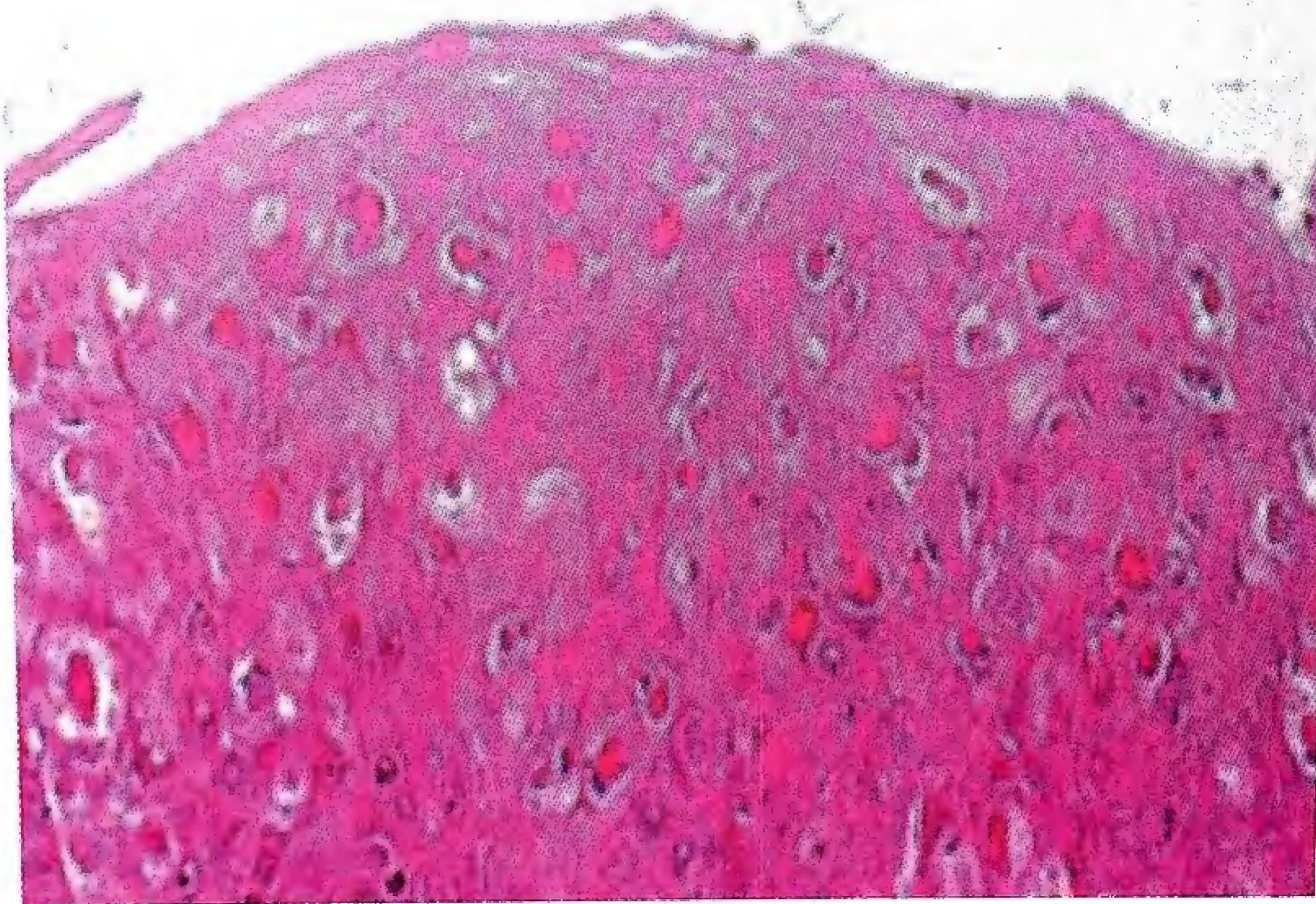




## pox

- Organ: skin
- Stain: H&E
- Disease: sheep pox
- Micro: Hypertrophy and hyperplasia of epidermal prickle cells. Numerous eosinophilic inclusions distend the cytoplasm of the affected cells.





✓



## IBR

Disease: IBR (infectious pustular  
balanoposthitis)

Macro: Rupture pustule on the penis







## IBR

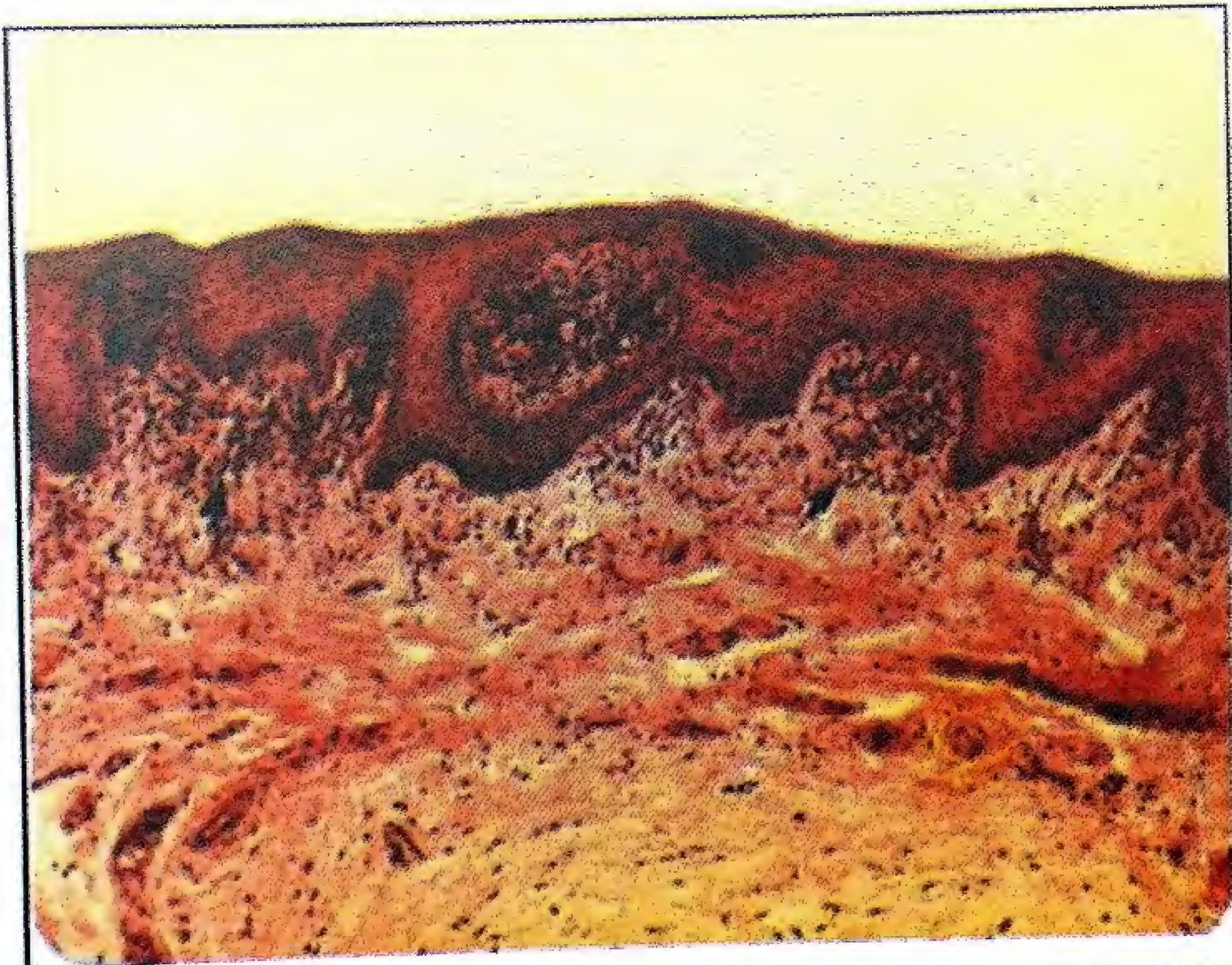
Disease: IBR (infectious pustular  
balanoposthitis)

Stain: H&E

Organ: penis

Micro: Round c ells infiltrations and edema







## IBR

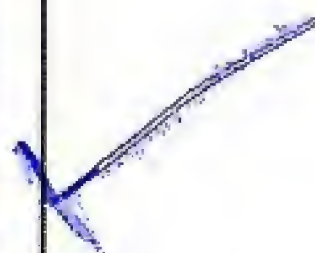
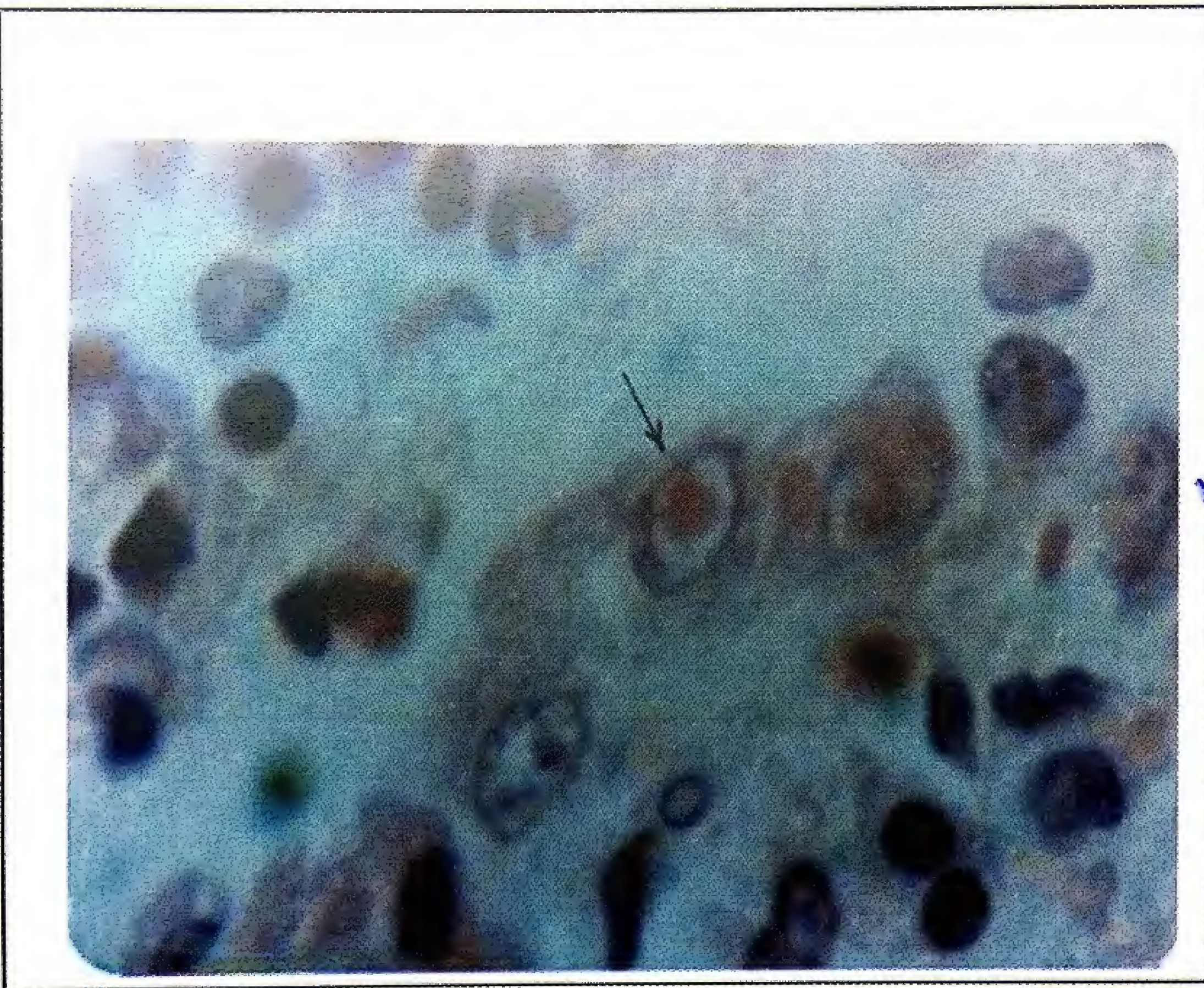
Disease: IBR

Stain: H&E

Organ: Bronchial epithelium

Micro: Intranuclear eosinophilic inclusion  
bodies in the bronchial epithelium.







## IBR

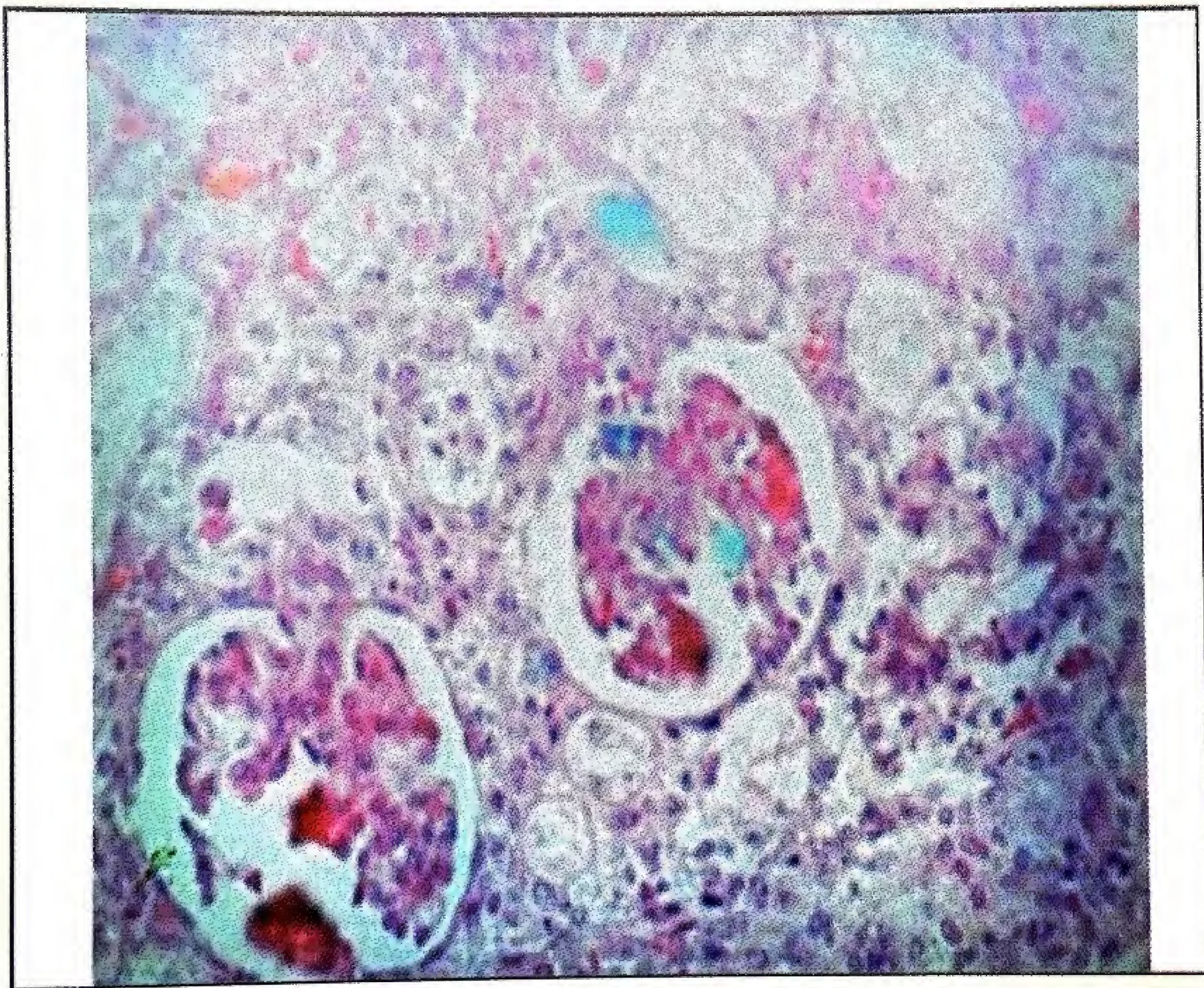
Disease: IBR

Stain: H&E

Organ: Kidney

Micro: Coagulative necrosis of the epithelium lining  
of renal tubules besides intranuclear  
eosinophilic inclusion bodies





✓



## IBR

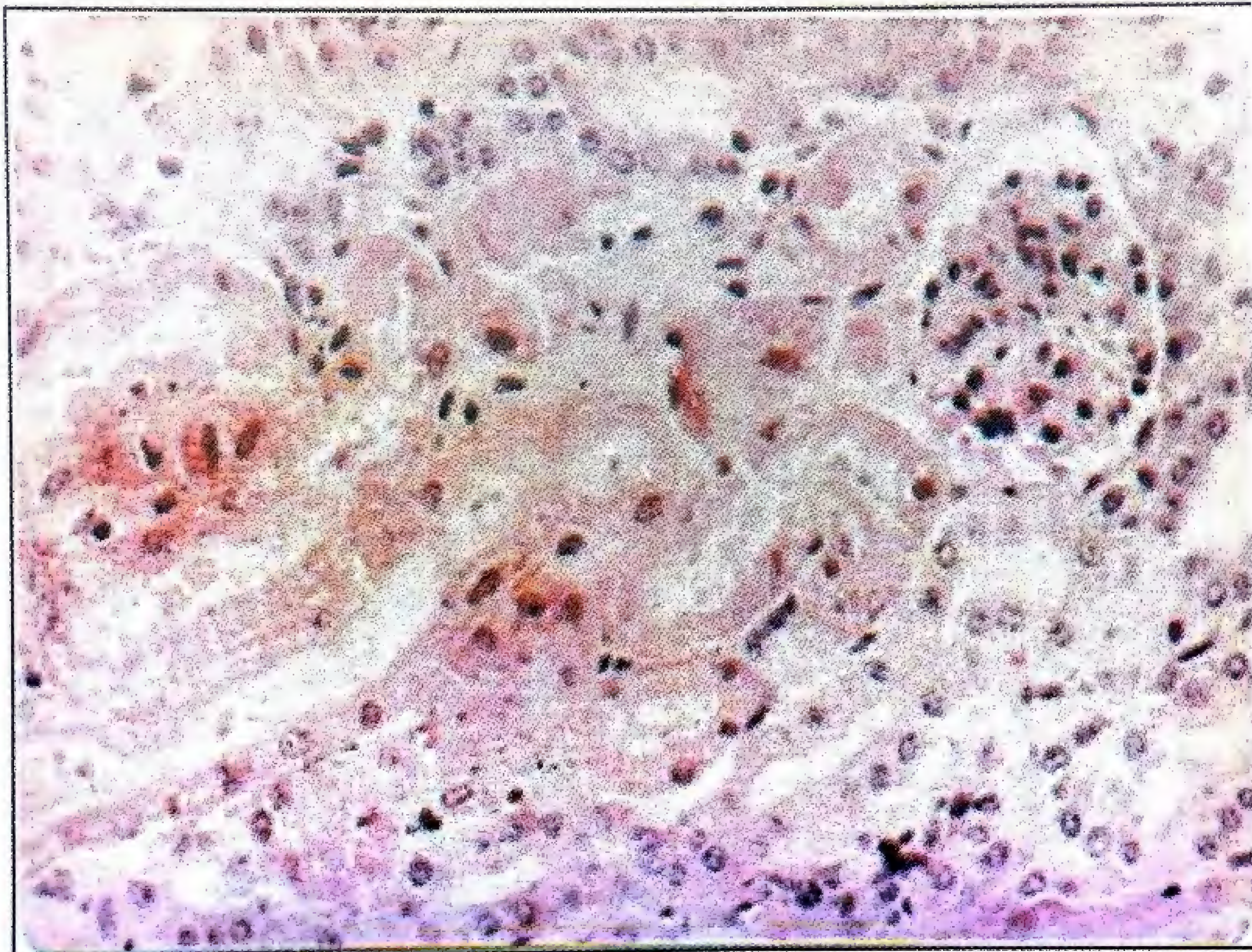
Disease: IBR

Stain: H&E

Organ: Kidney

Micro: Coagulative necrosis of the epithelium  
lining of renal tubules





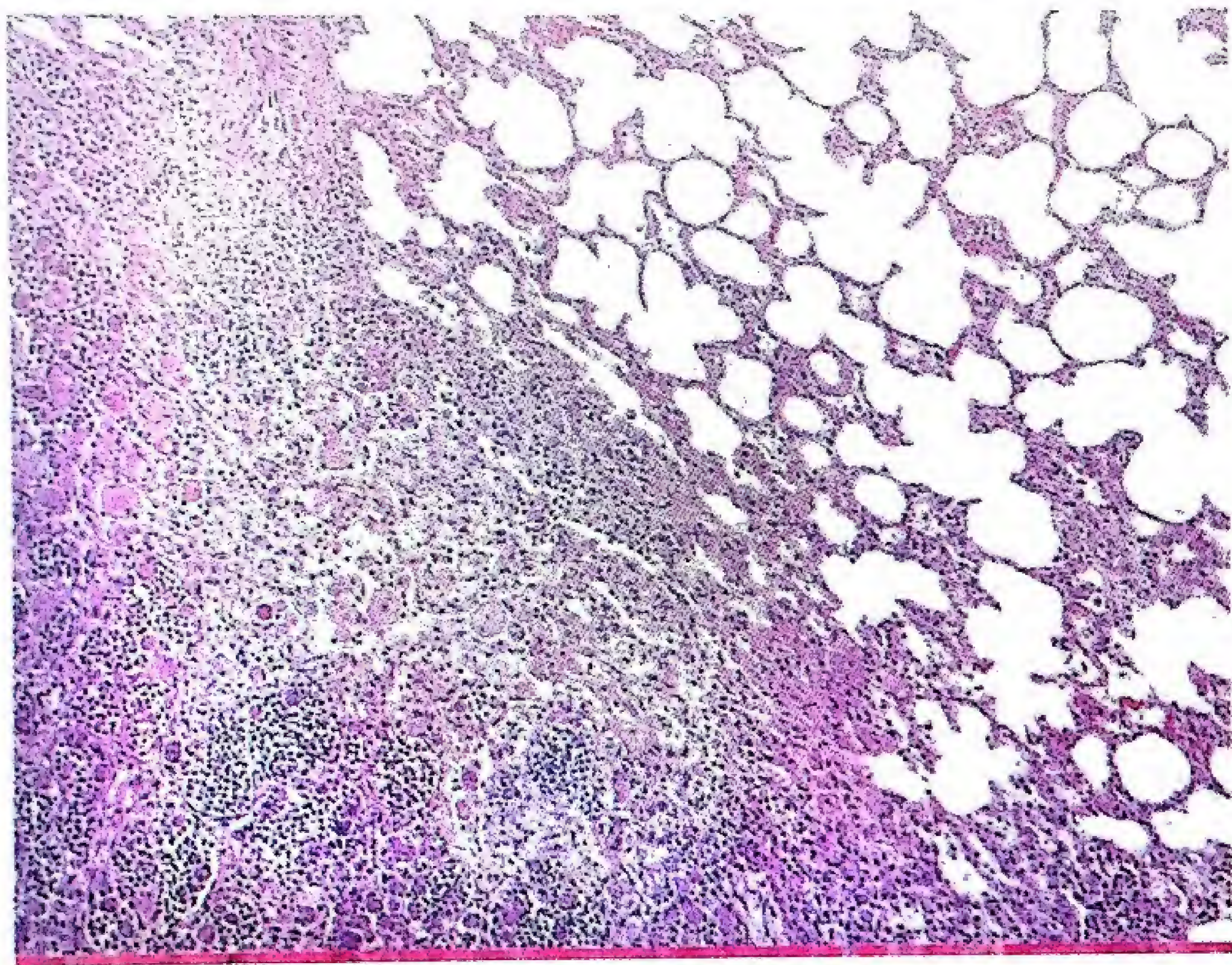
1



## IBR (respiratory form)

- Organ: lung
- Stain: H&E
- Disease: IBR
- Micro: broncho-pneumonia represented by neutrophils, macrophages and giant cells are filled the alveoli





✓



## IBR (genital form IPV)

the vaginal mucus membrane showed multiple pustules.





✓



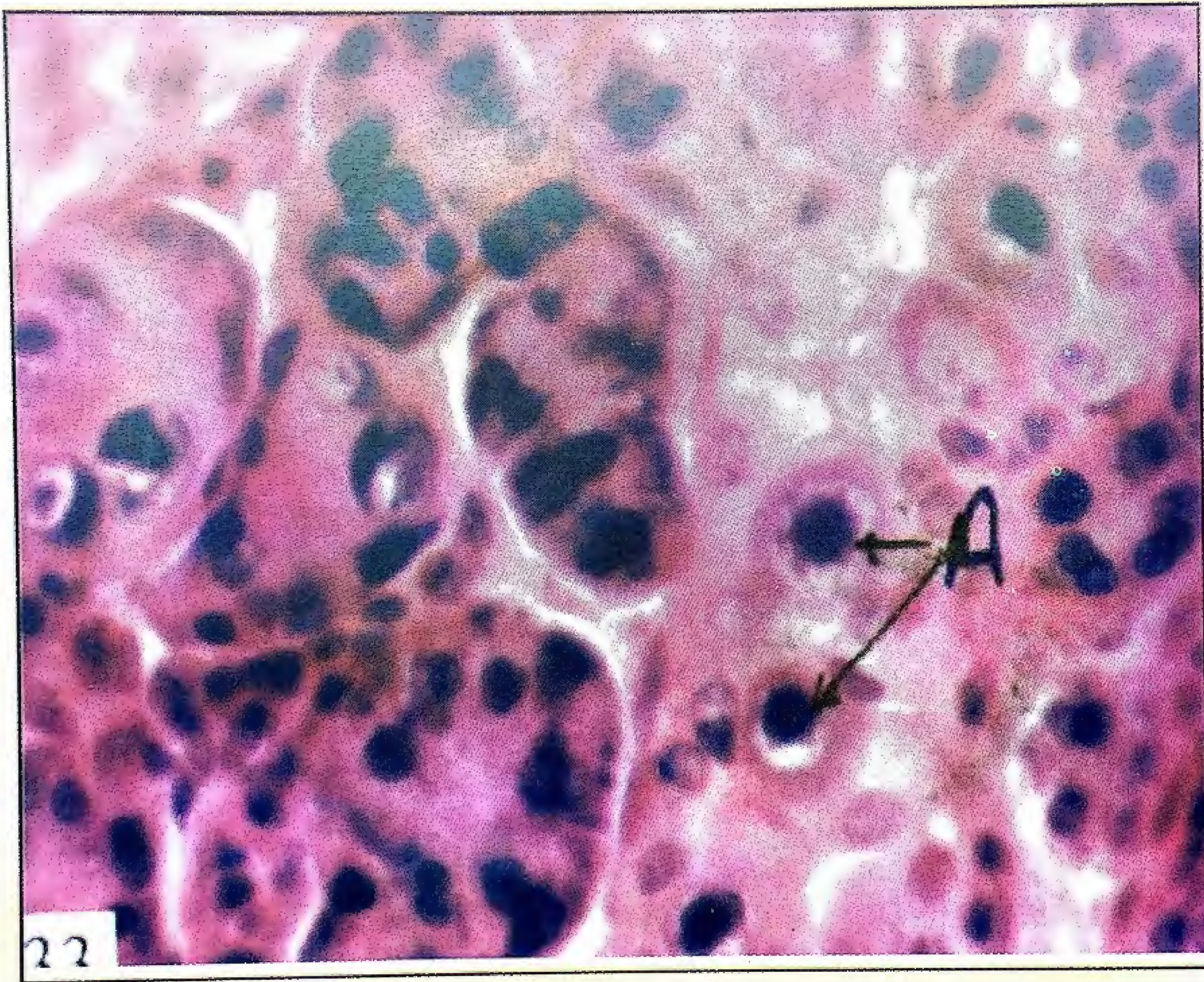
## **Cytomegalic Inclusion Disease**

- **Organ : Parotid Salivary gland**
- **(Guinea pig).**
- **Stain :H & E.**
- **Disease: Cytomegalic Inclusion Disease**

**Micro : Large basophilic intranuclear inclusion bodies (A) are seen in the epithelial lining of the ducts of the serous salivary glands.**

*Laboratory Gland*





7



حصى الحبيبة

## Malignant catarrhal fever

Disease: MCF

Macro: massive erosions in buccal mucosa  
and tongue







## **Malignant catarrhal fever**

Disease: MCF

Macro: Enlarges and congested liver with  
grayish white area (necrosis)







## **Malignant catarrhal fever**

**Disease: MCF**

**Macro: Enlarges and congested kidney with  
grayish white area (necrosis)**





✓



## **Malignant catarrhal fever**

Disease: MCF

Macro: Enlarges and congested lymph node  
in compare with normal one





✓



## MCF

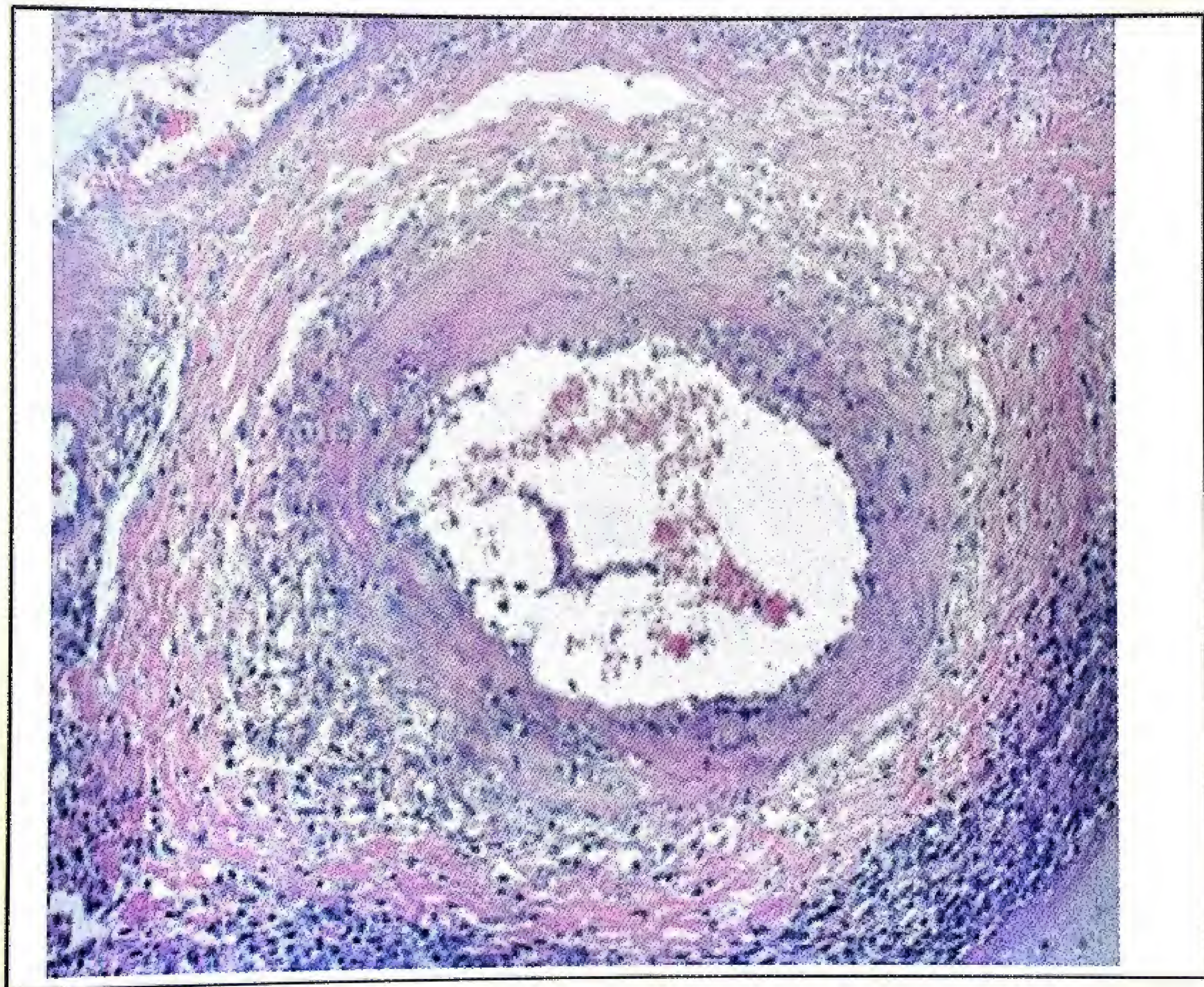
Disease: MCF

Stain: H&E

Organ: Blood vessels

Micro: Lymphocytic vasculitis characterized by  
infiltration of blood vessels with round cells



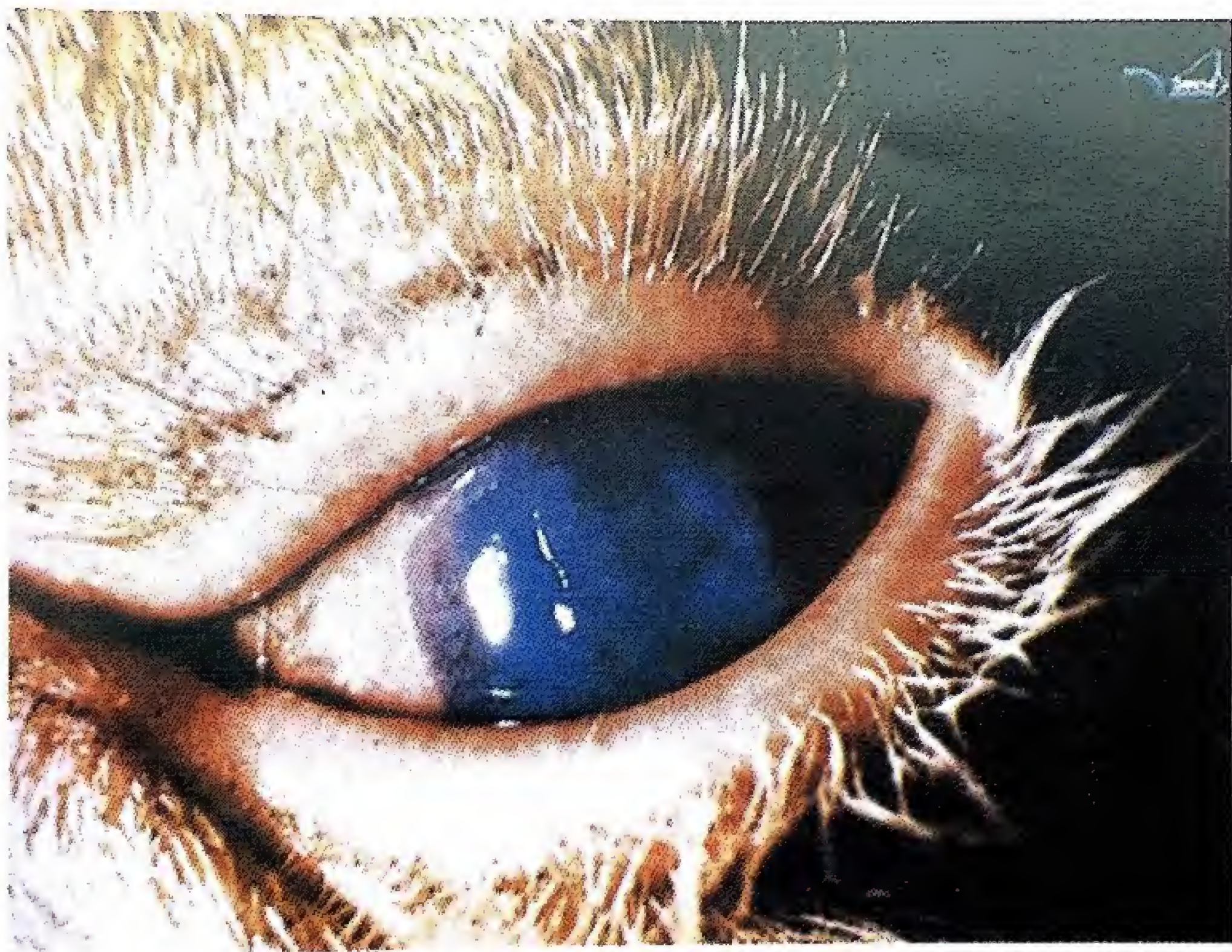




# Malignant catarrhal fever

**corneal opacity, conjunctivitis  
and the reddening of the eye**



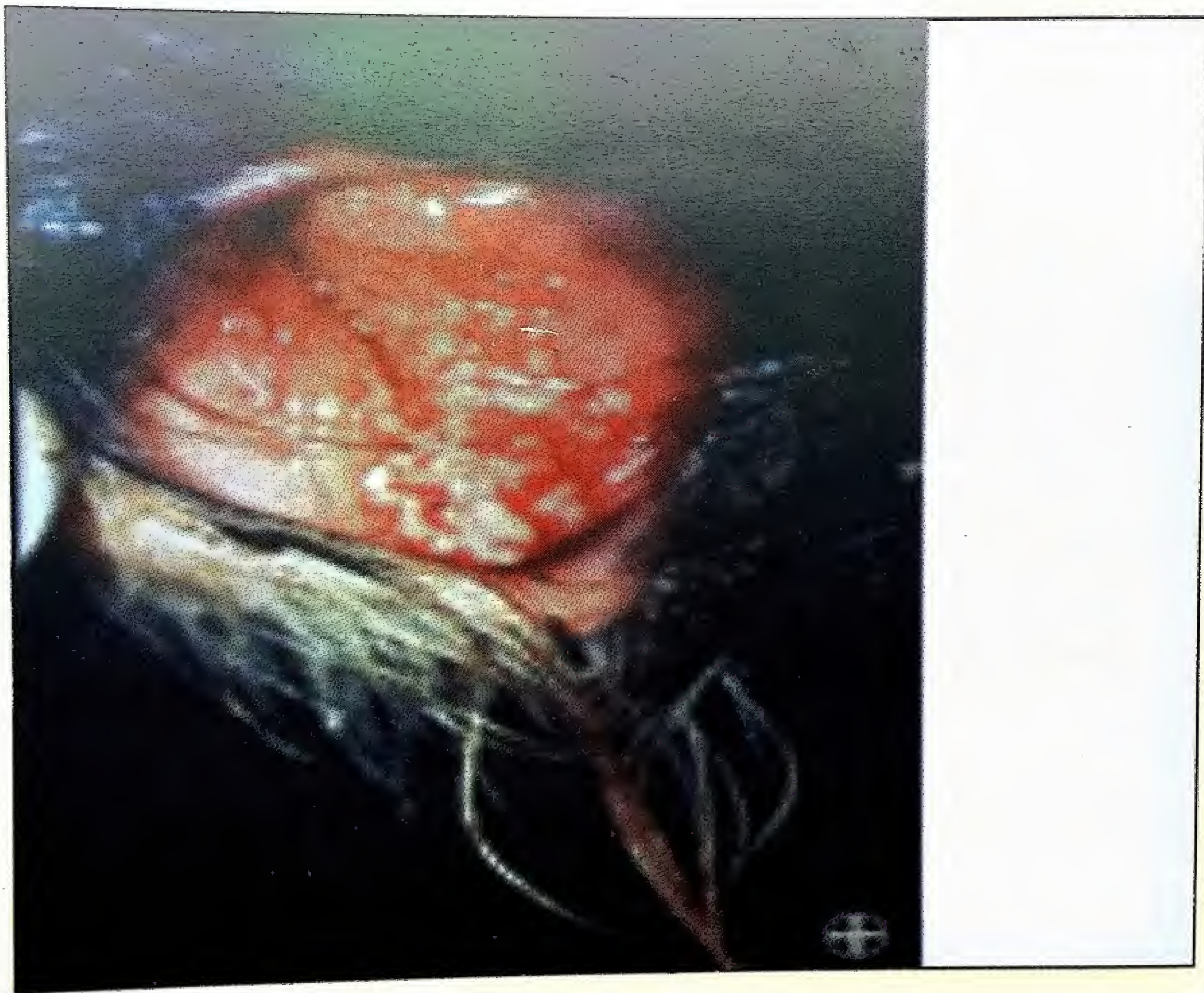




## IBR (genital form IPV)

the vaginal mucus membrane showed  
multipule pustules.





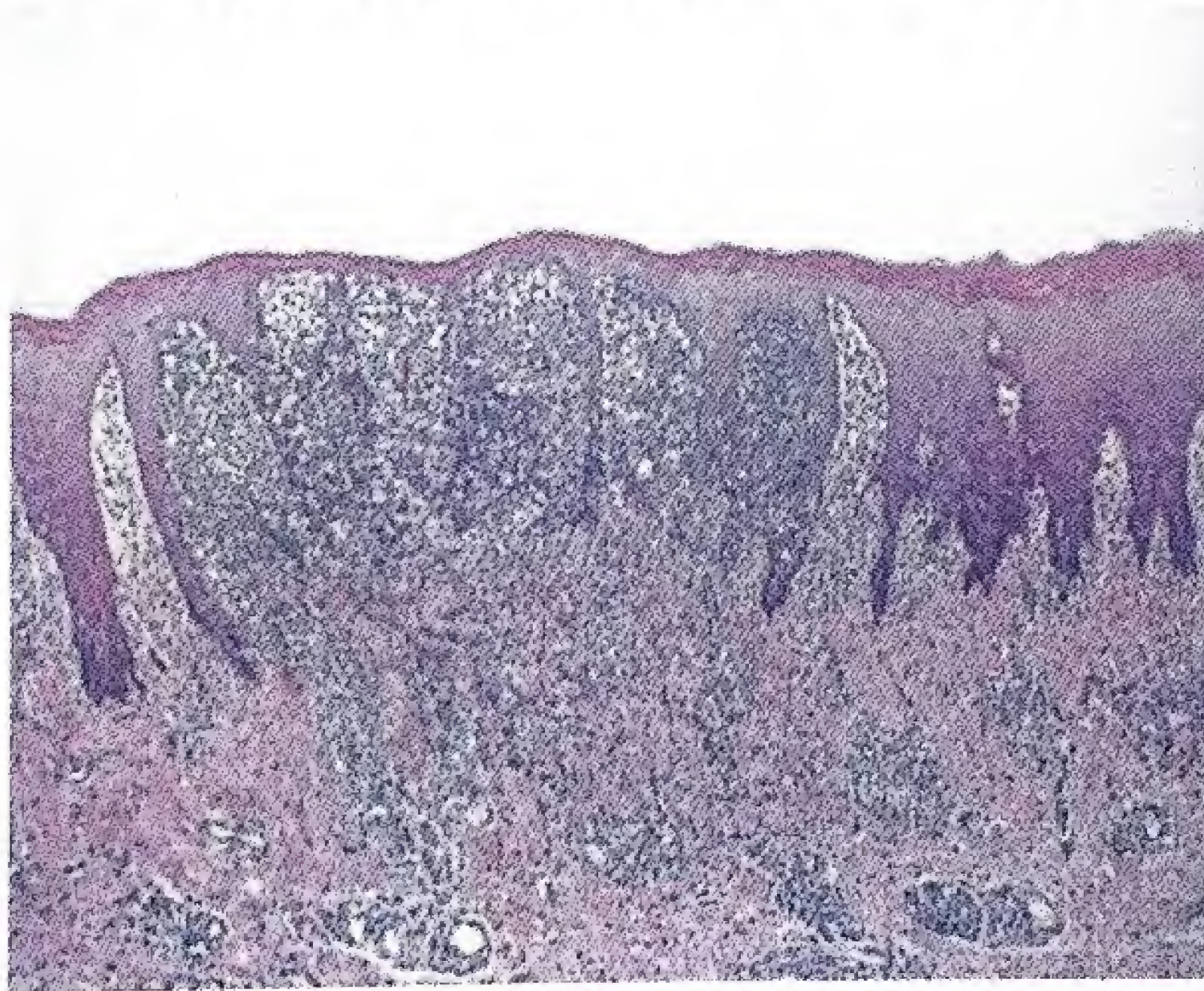


# Malignant Catarrhal Fever

- Organ: skin
- Stain: H&E
- Disease: MCF
- Micro: Lymphocytic aggregation in the dermal tissue.



# Malignant Catarrhal Fever





# Malignant Catarrhal Fever

- Organ: Brain
- Stain: H&E
- Disease: MCF
- Micro: peri-vascular cuffing of a cerebral blood vessel with lymphocytes.



# Malignant Catarrhal Fever





# IBR (abortion form)

Aborted autolysed fetus of IBR



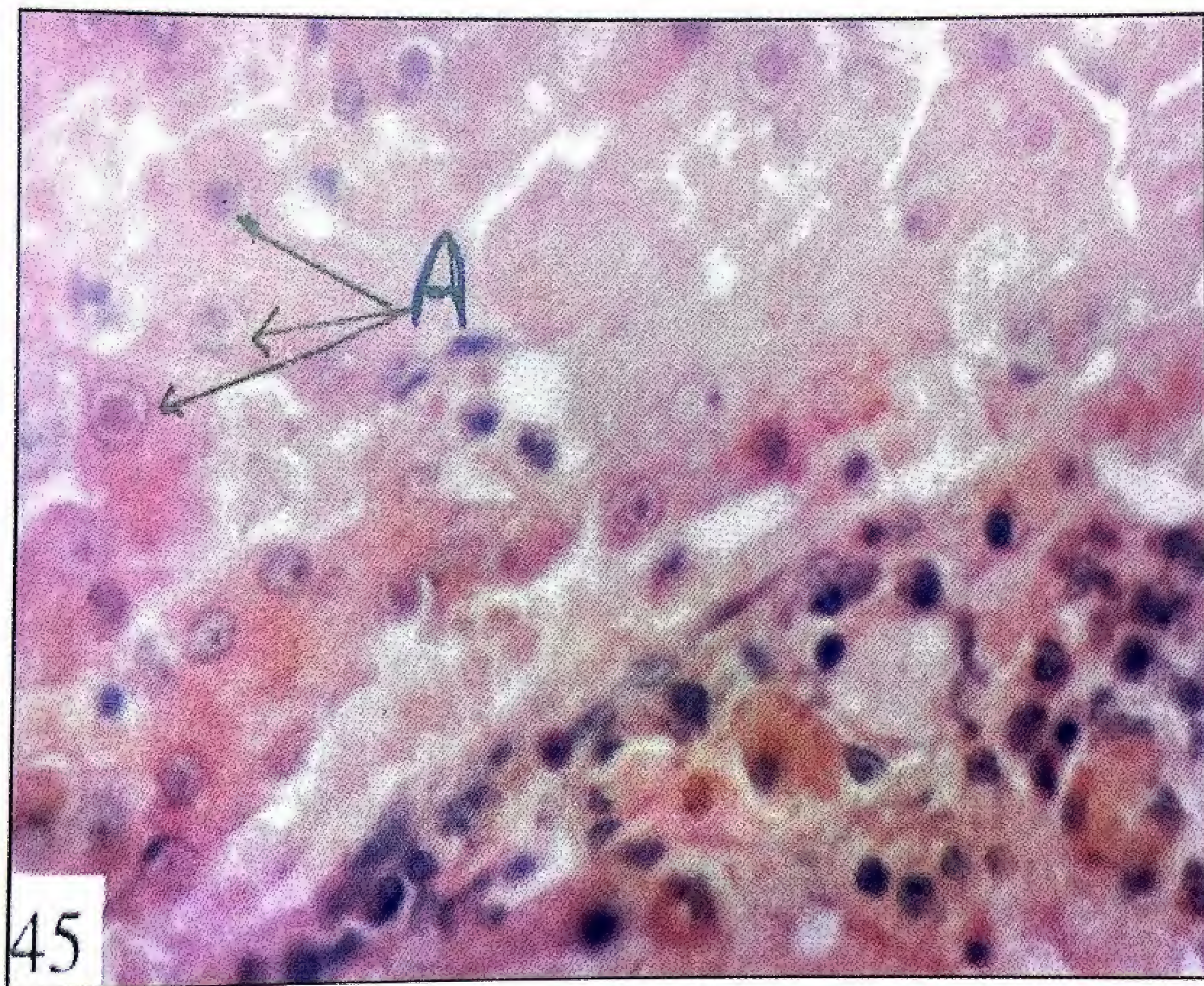




## **Infectious canine hepatitis**

- **Organ : Liver (Dog).**
- **Stain : H & E.**
- **Disease: Infectious Canine Hepatitis**
- **Micro : Large basophilic intranuclear inclusion bodies (A) are seen in the hepatocytes besides lymphocytic infiltration in the portal tracts and necrotic hepatic cells.**



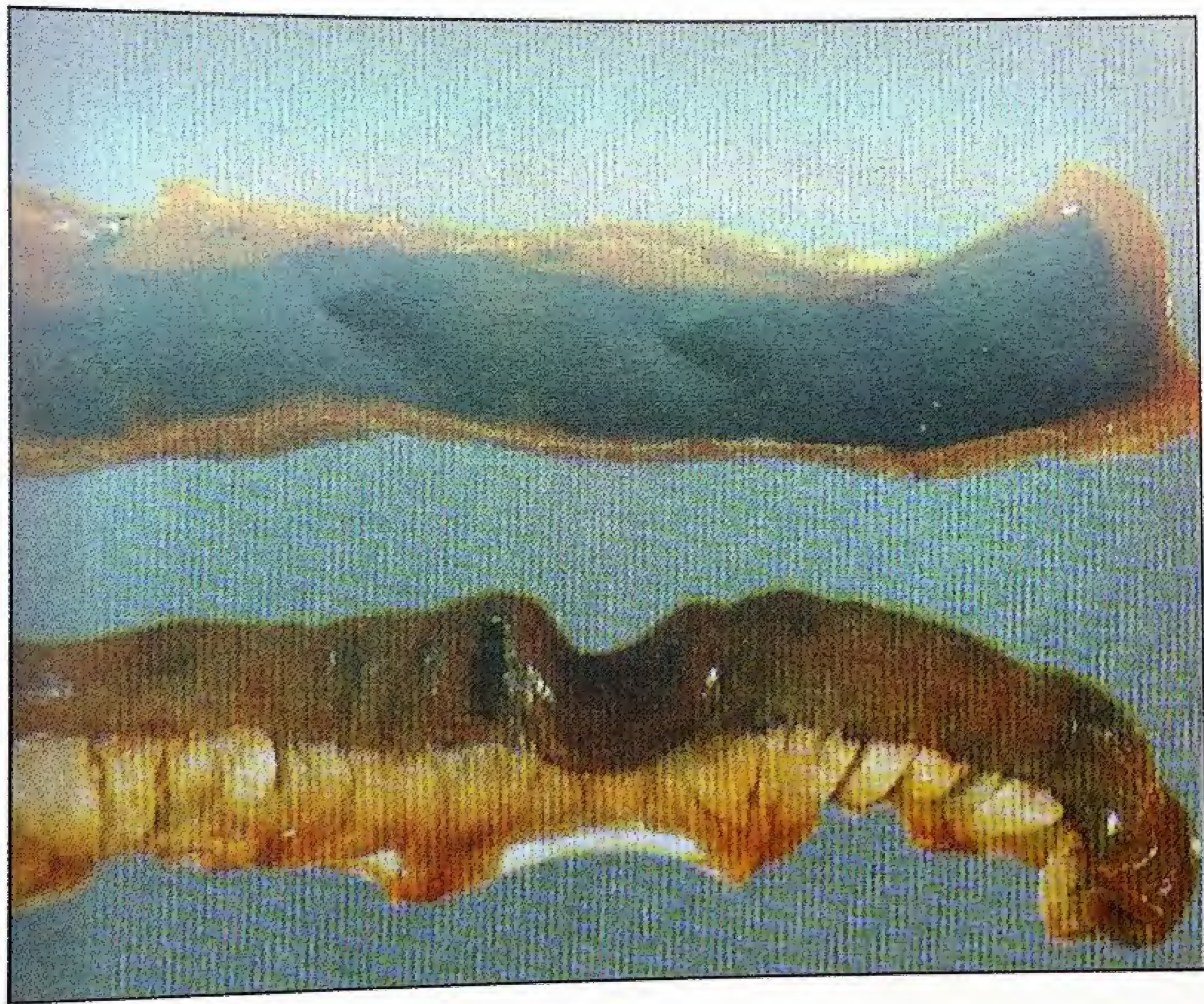




# Parvovirus

- **Organ: Intestine.**
- **Disease: Parvovirus infection .**
- **Lesion: Hemorrhagic enteritis.**
- **Macro: Severe redness of mucosa as result of active hyperemia and hemorrhage. Free blood in the lumen. Irregular serosal surface which also is hyperemic.**



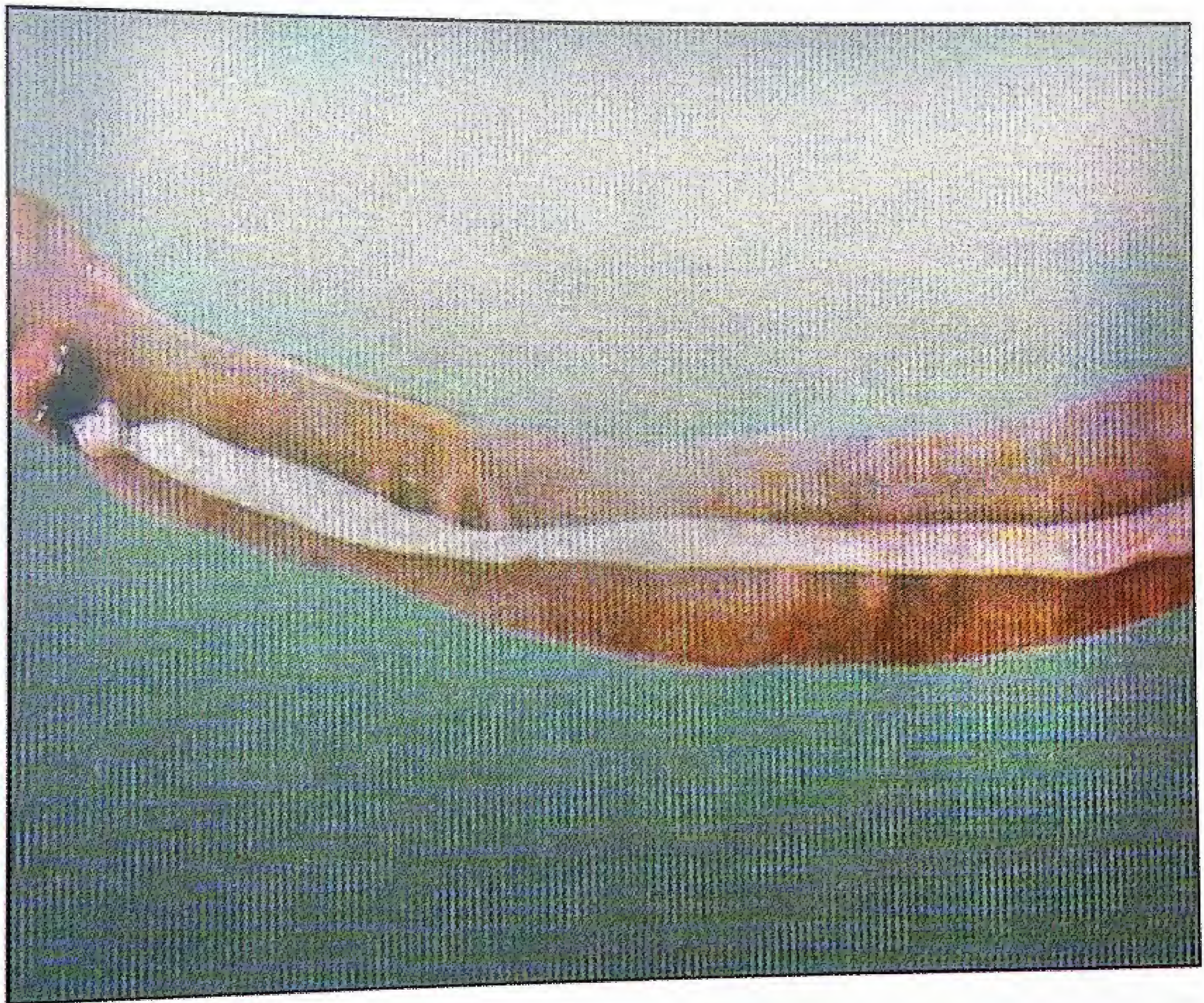




# **Parvovirus infection**

- **Organ: Intestine.**
- **Disease: Parvovirus infection.**
- **Lesion: a acute fibrinous enteritis.**
- **Macro: Redness caused by active hyperemia. A yellowish fibrin cast on the mucosal surface.**







## Foot and mouth disease

- Cow showing excessive salivation with smucky sound







## Foot and mouth disease

- Bovine heart showing longitudinal grayish (tigroid heart) streaks in myocardium



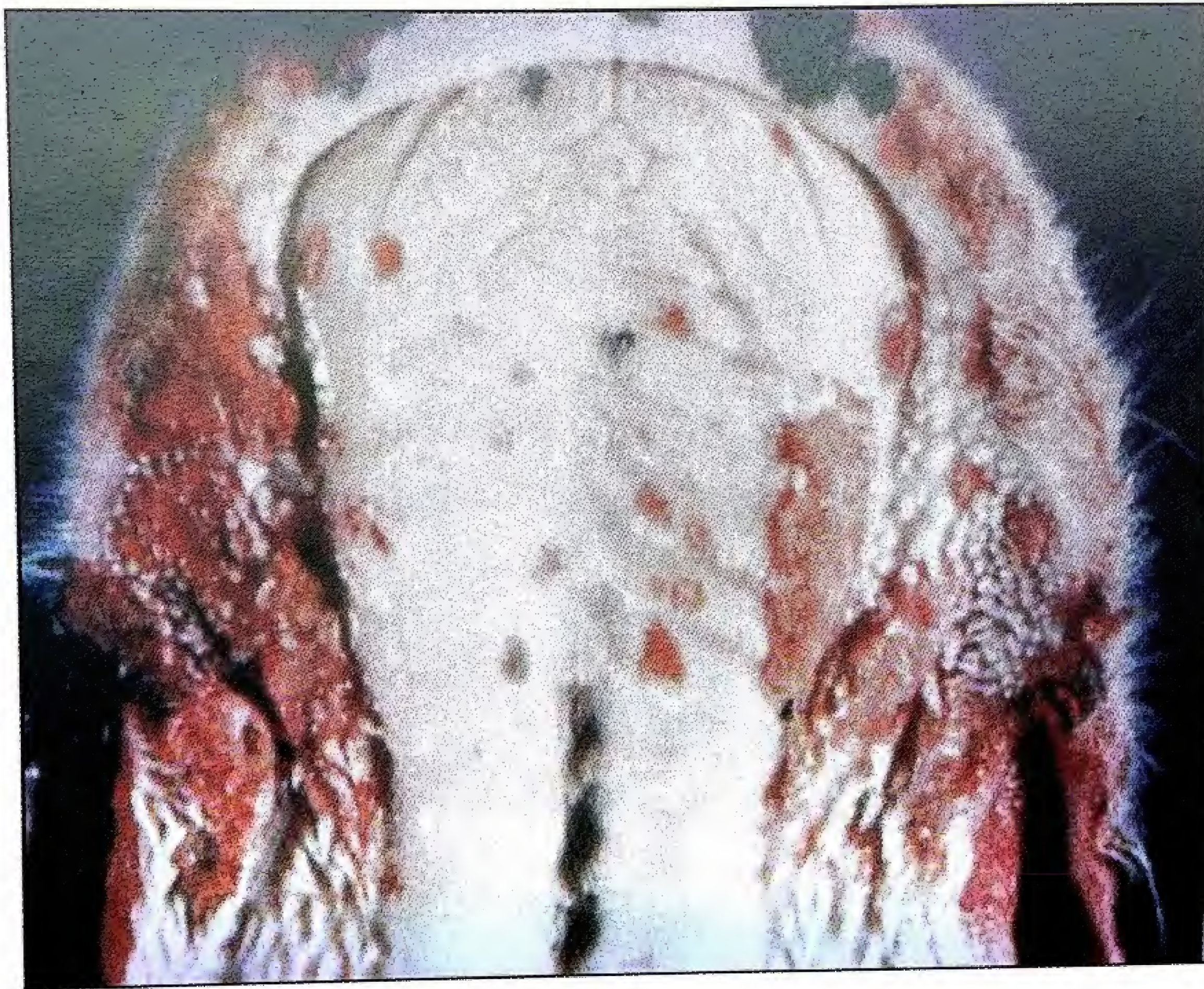




# **BVD**

- **Organ: Hard palate**
- **Disease: Bovine viral diarrhea.**
- **Lesion: Erosive and ulcerative stomatitis**
- **Macro: loss of lining epithelium of hard palate and appears as red area.**



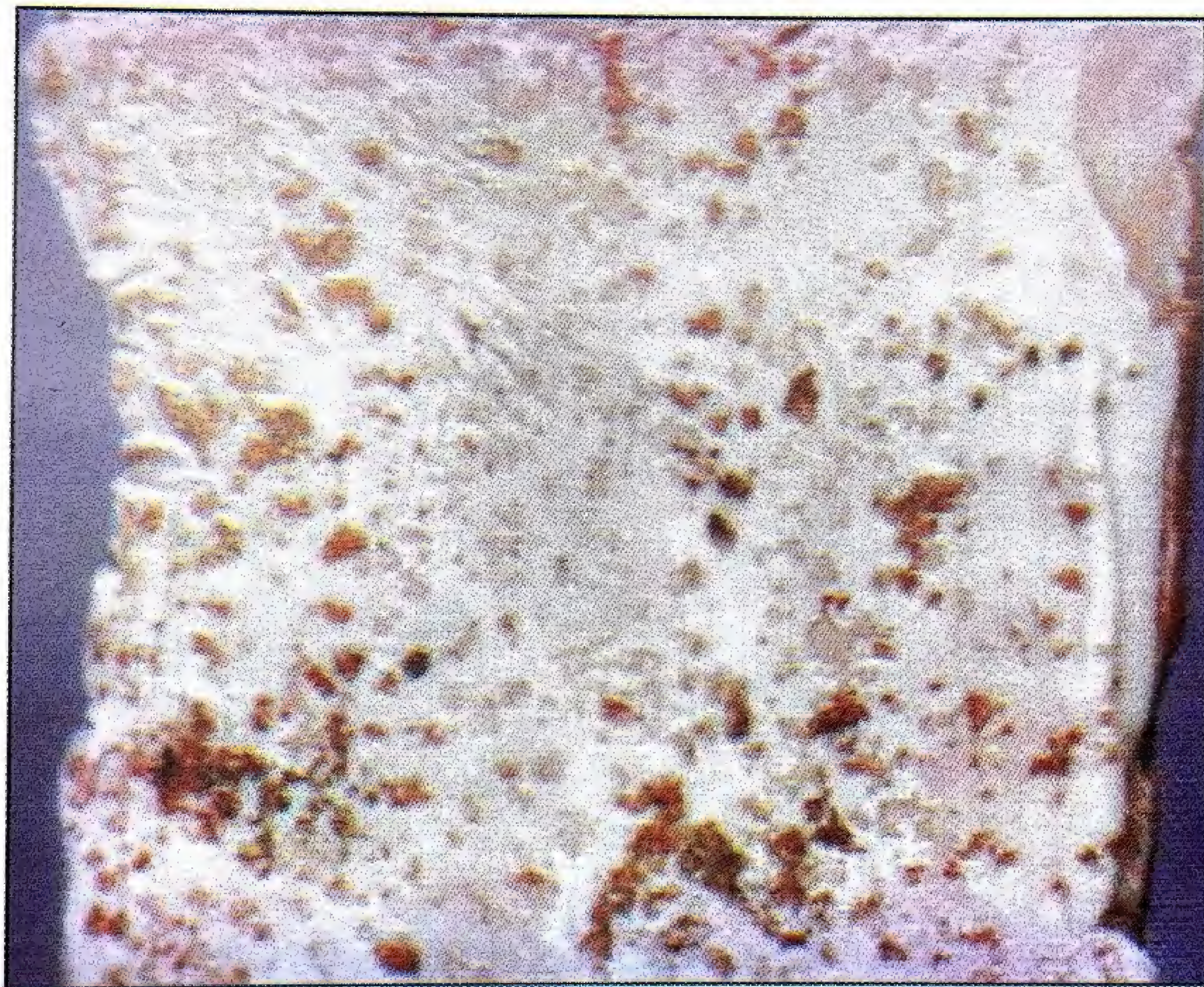




# **BVD**

- **Organ: esophagus.**
- **Disease: Bovine viral diarrhea.**
- **Macro: presence of multiple variably sized and variably shaped esophageal mucosal ulcers caused by pestivirus of BVD.**



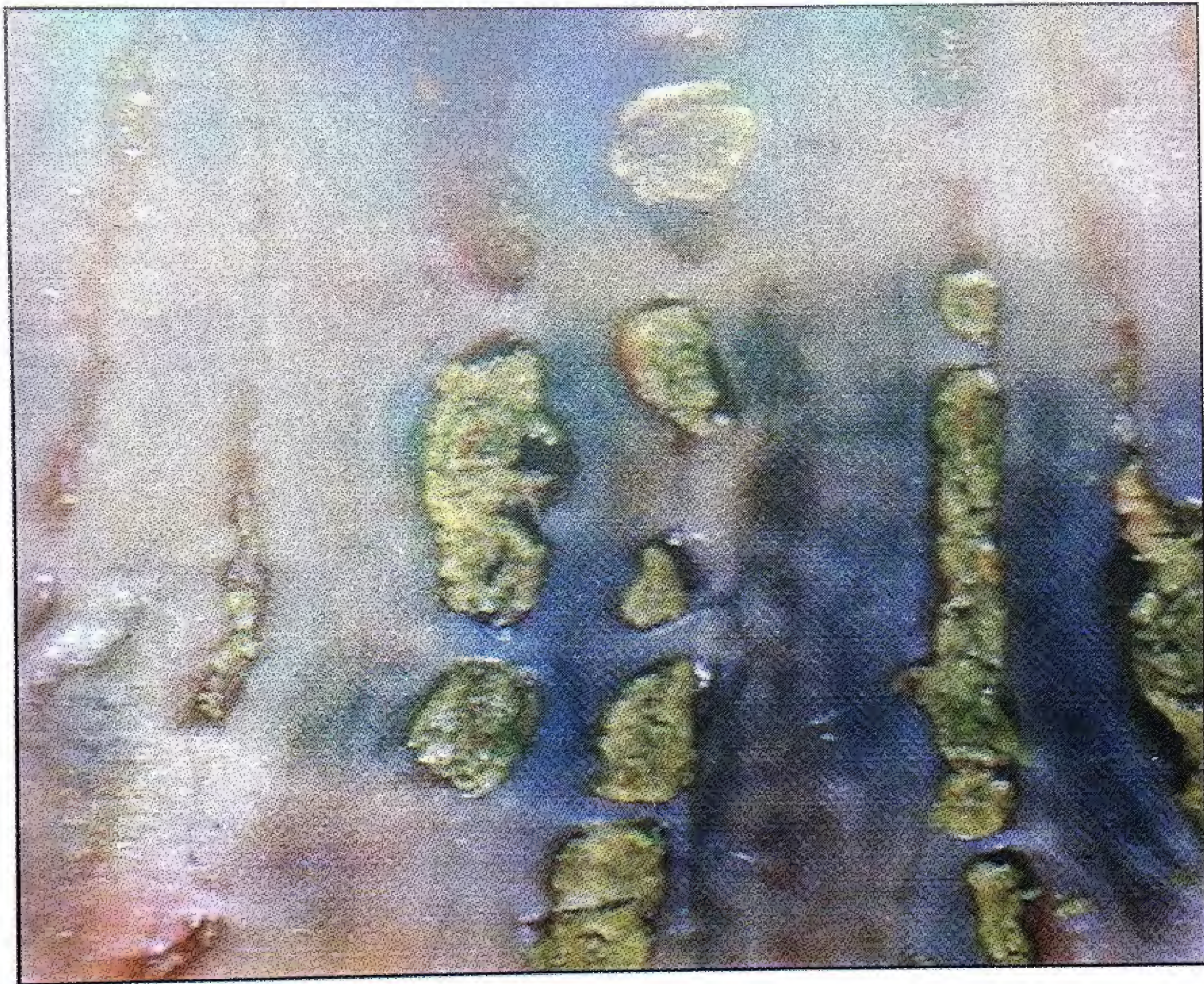




# **BVD**

- **Organ: esophagus.**
- **Disease: Bovine viral diarrhea.**
- **Macro: presence of multiple variably sharply demarcated ulcers (vertically linear and red streaks) and similar areas covered by diphtheritic membrane appears as yellowish to brown streaks) caused by pestivirus of BVD.**







## **BVD**

- **Organ: Ileum.**
- **Disease: Bovine viral diarrhea.**
- **Macro: presence of necrosis of peyer s patches and overlying epithelium, mucosa becomes intensely hemorrhagic and covered by suppurative exudate caused by pestivirus of BVD.**



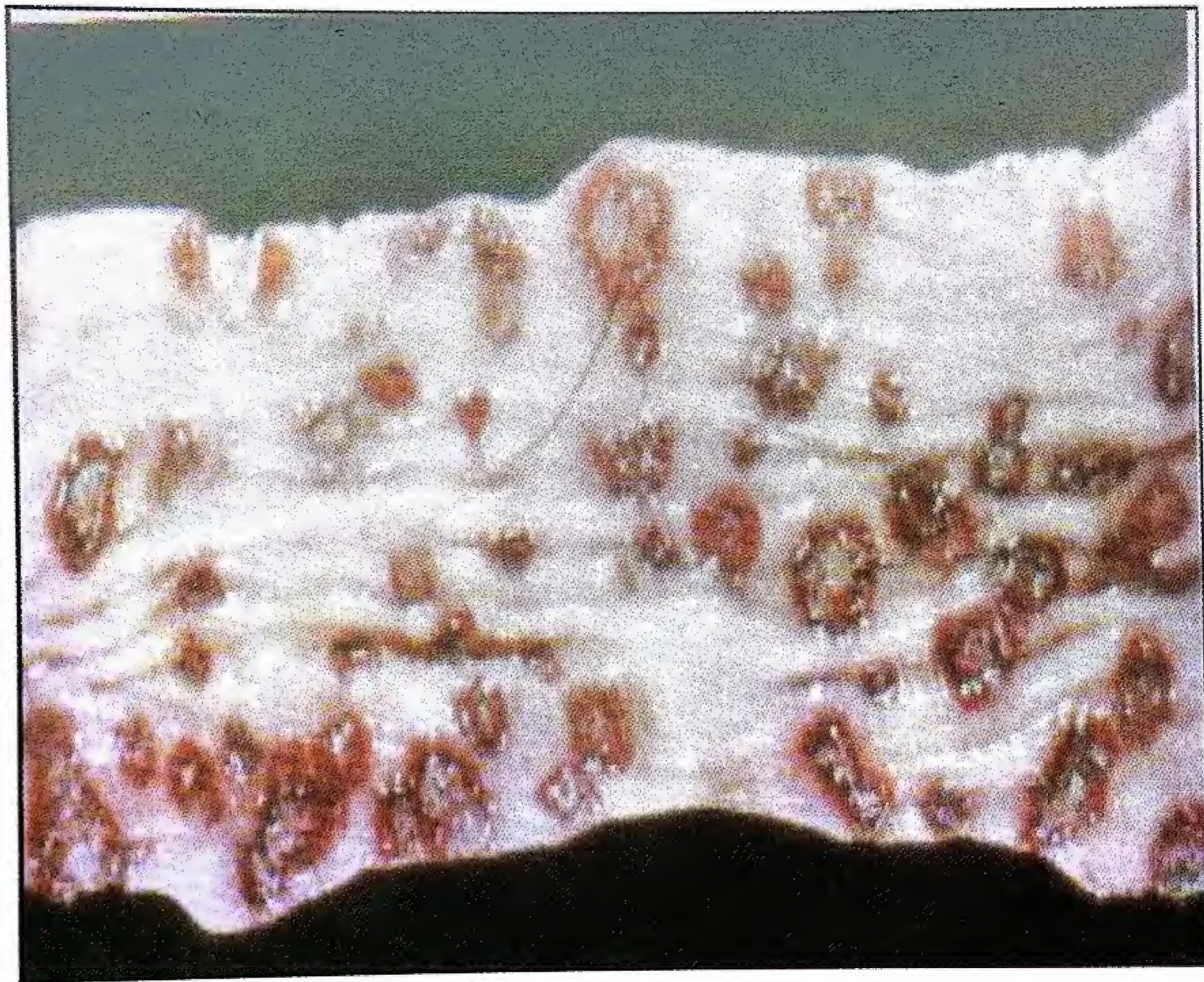




## **BVD**

- **Organ: colon.**
- **Disease: Bovine viral diarrhea.**
- **Macro: presence of multiple circumscribed ulcers in colon mucosa with intensely hyperemic edges caused by pestivirus of BVD.**



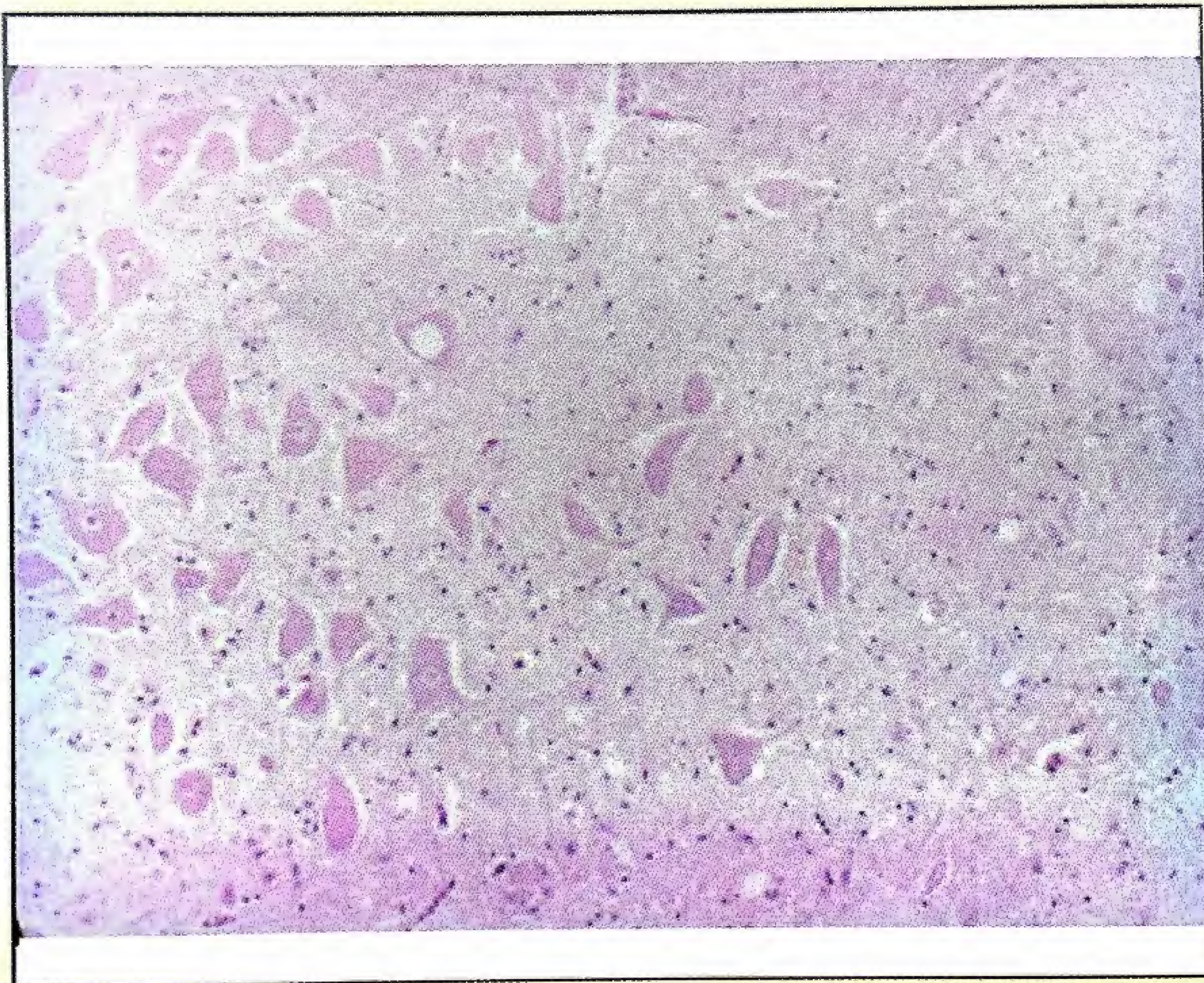




## **Bovine spongiform encephalopathy**

- **Organ : Brain (hypothalamus)**
- **Stain : H & E.**
- **Disease: BSE**
- **Micro : Large single or multiple vacuole is present in neuron**



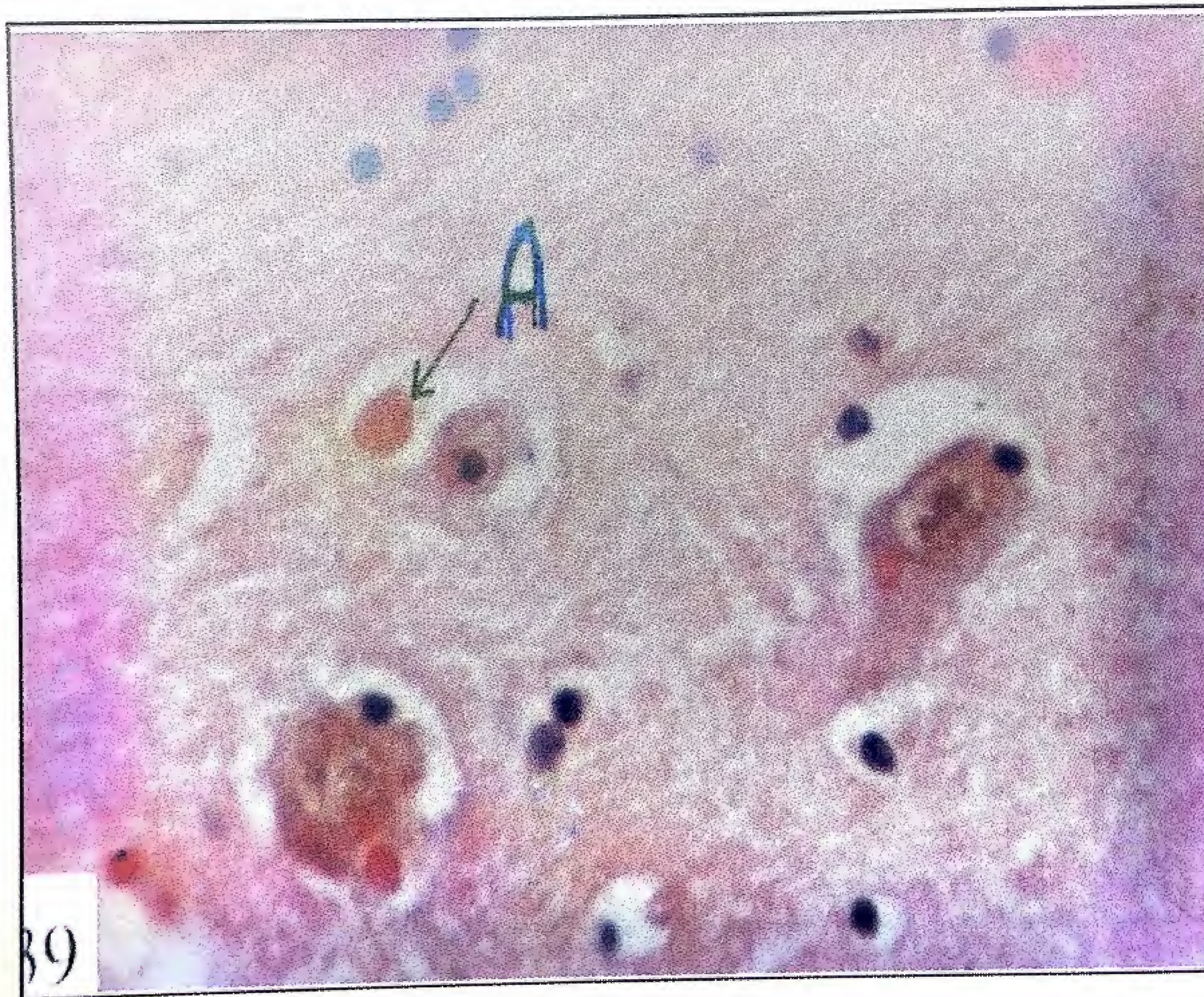




## **Rabies**

- **Organ : Brain (Hippocampus)**
- **Stain : H & E.**
- **Disease: Rabies.**
- **Micro : Intracytoplasmic inclusion bodies (A) are seen in the neurons.**



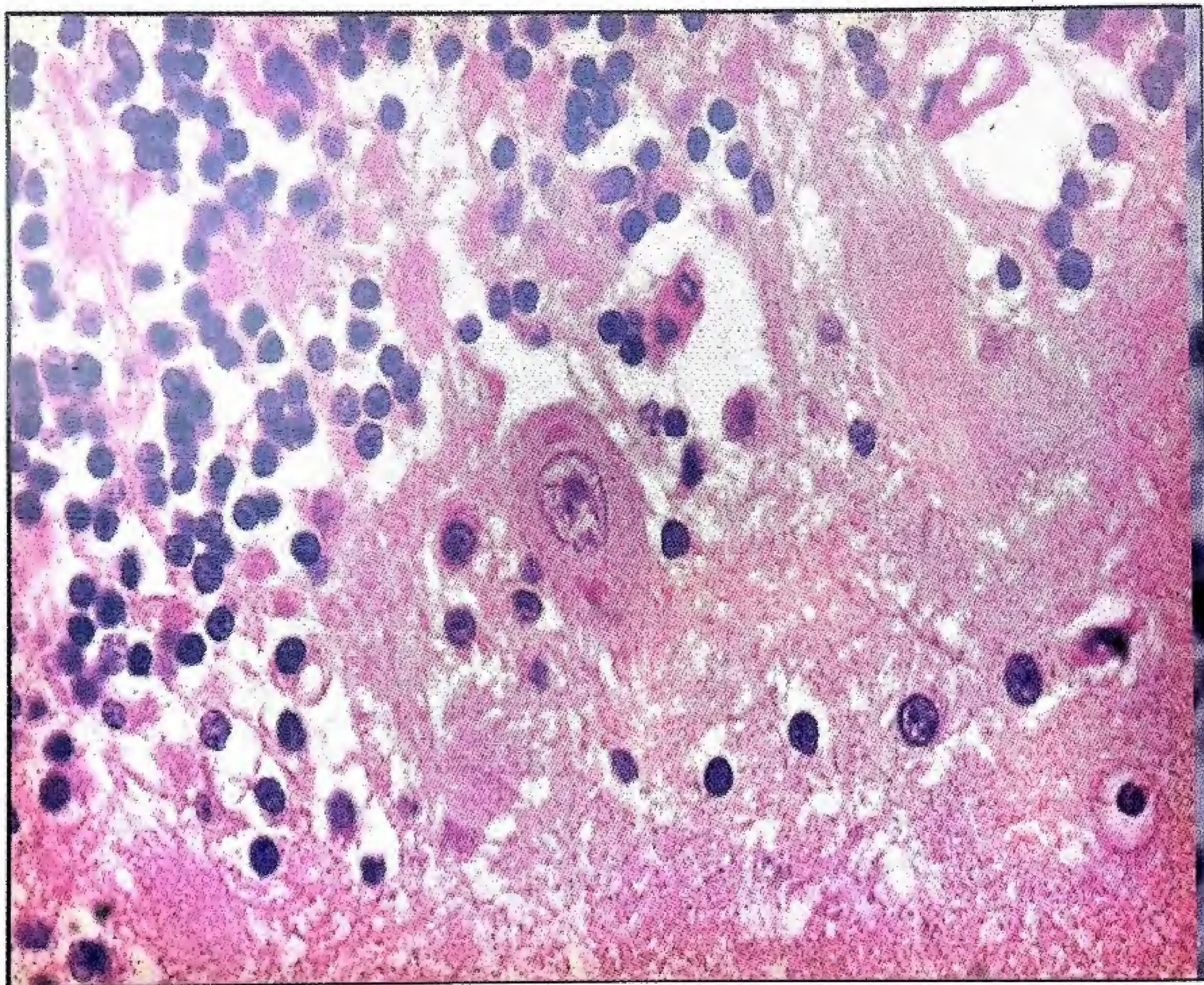




## **Rabies**

- **Organ : Brain (Cerebellum) .**
- **Stain : H & E.**
- **Disease: Rabies.**
- **Micro : Intracytoplas- mic inclusion bodies (A), Negri bodies, in the cytoplasm of Purkinjie cells with edema**







## **Canine distemper**

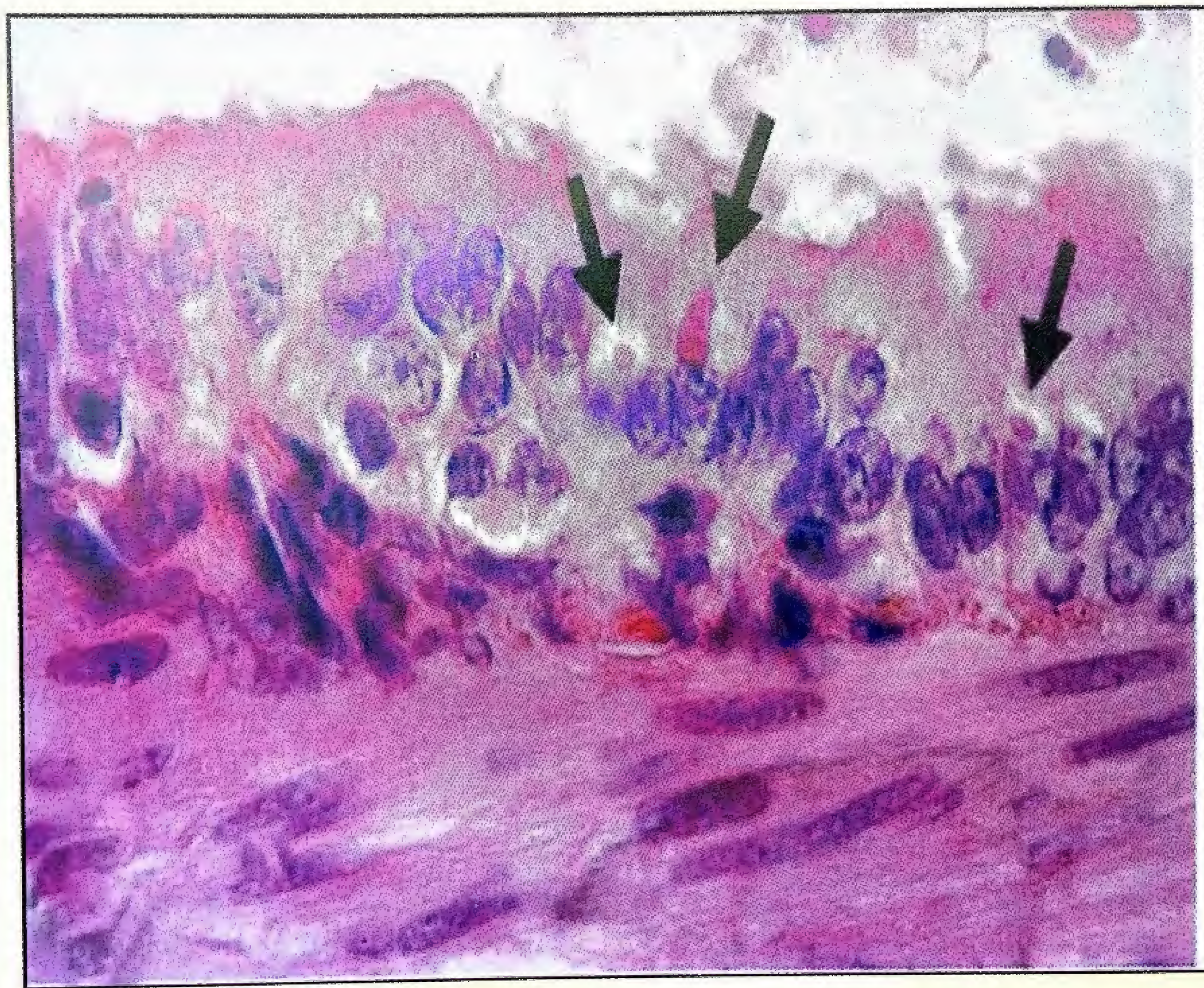
- **Organ : Lung (Bronchus)**

- **Stain :H & E.**

- **Disease: Canine distemper**

**Micro : Intracytoplasmic eosinophilic inclusion bodies in the bronchiolar epithelium. :**



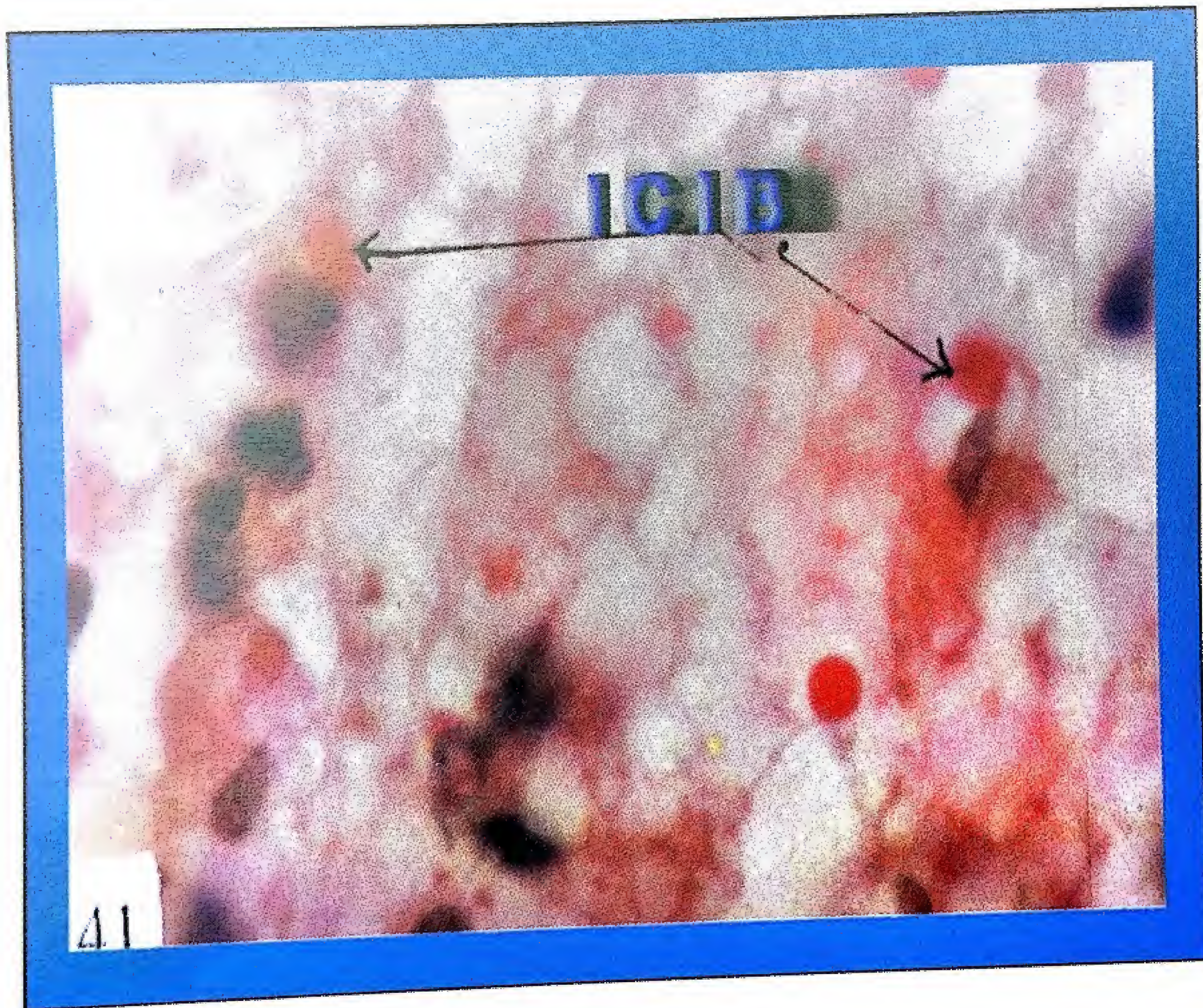




## **Canine distemper**

- **Organ : Cerebellum (Dog).**
- **Stain : H & E.**
- **Disease: Canine distemper**
- **Micro : intranuclear inclusion bodies in the gemistocytes**



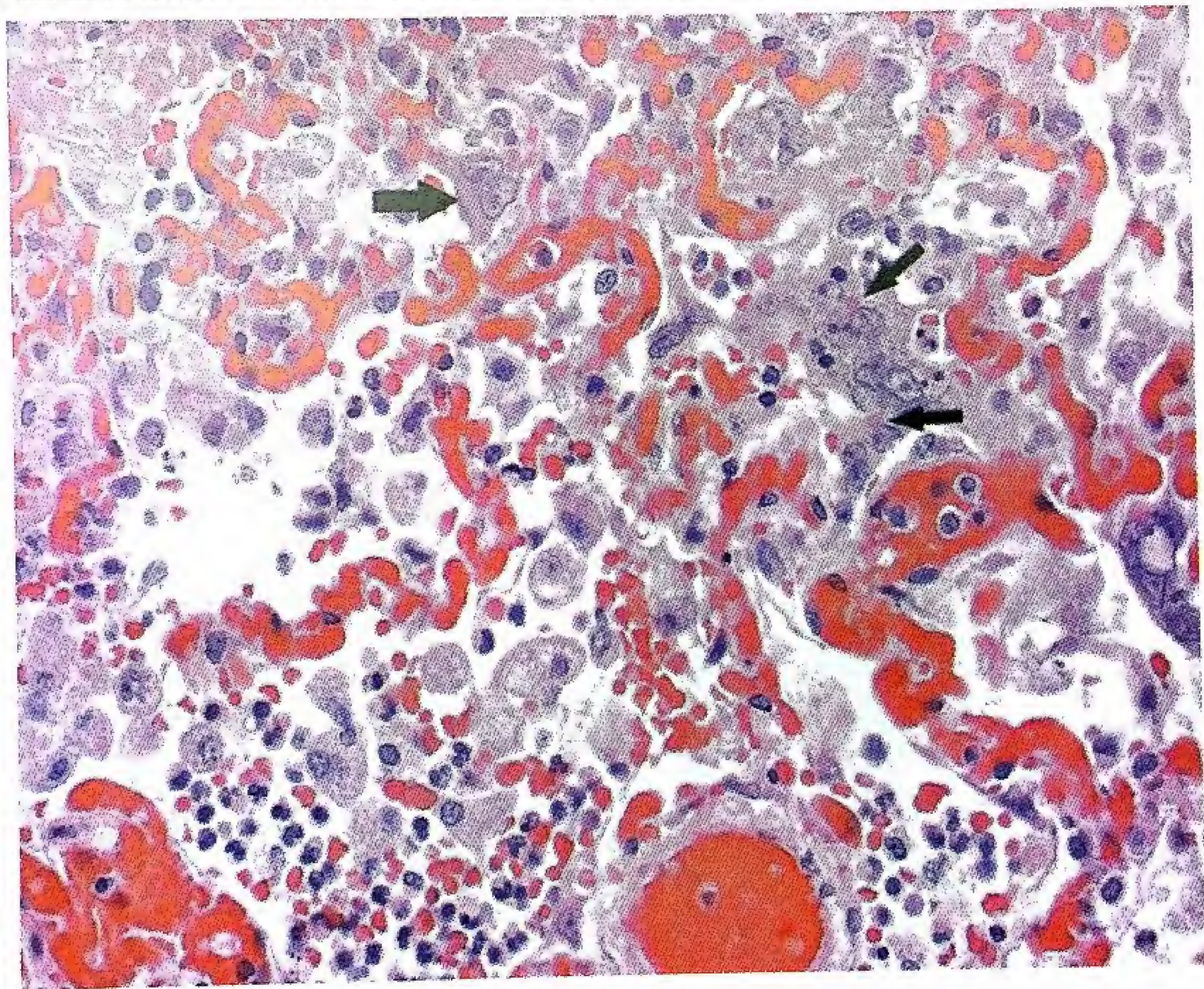




## Canine distemper

- **Organ : Lung.**
- **Stain : H & E.**
- **Disease: Canine distemper**
- **Micro** the syncytial cells (thick arrow) formed by viral-induced fusion of epithelial cells.  
Intracytoplasmic viral inclusion bodies (thin arrows) are present within some syncytial cells



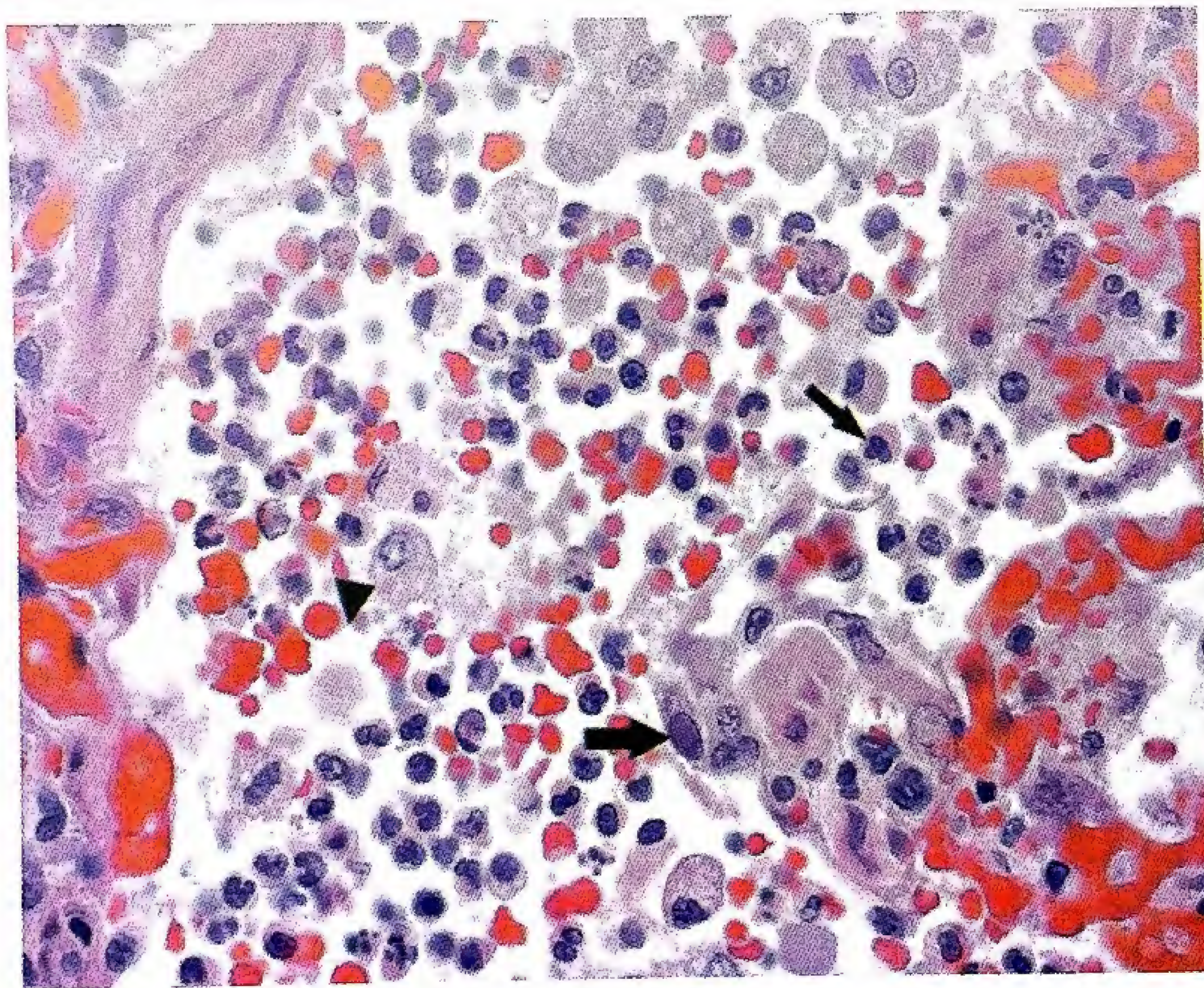




## Canine distemper

- **Organ : Lung.**
- **Stain : H & E.**
- **Disease: Canine distemper**
- **Micro** Another high magnification view, showing an intranuclear inclusion body (thick arrow). Alveolar spaces contain many neutrophils (thin arrow) and fewer macrophages (arrowhead).)



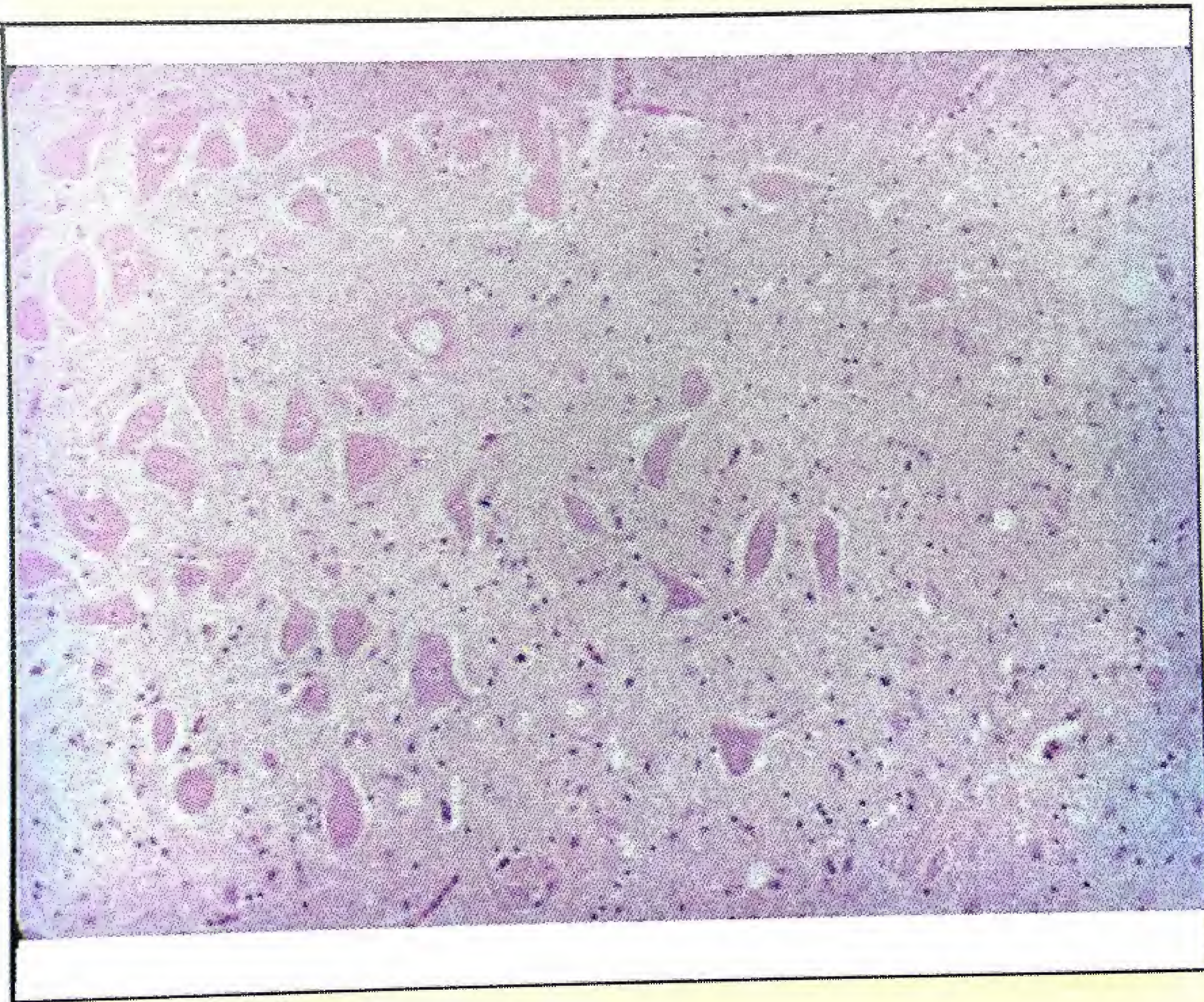




## **Bovine spongiform encephalopathy**

- **Organ : Brain (hypothalamus)**
- **Stain : H & E.**
- **Disease: BSE**
- **Micro : Large single or multiple vacuole is present in neuron**



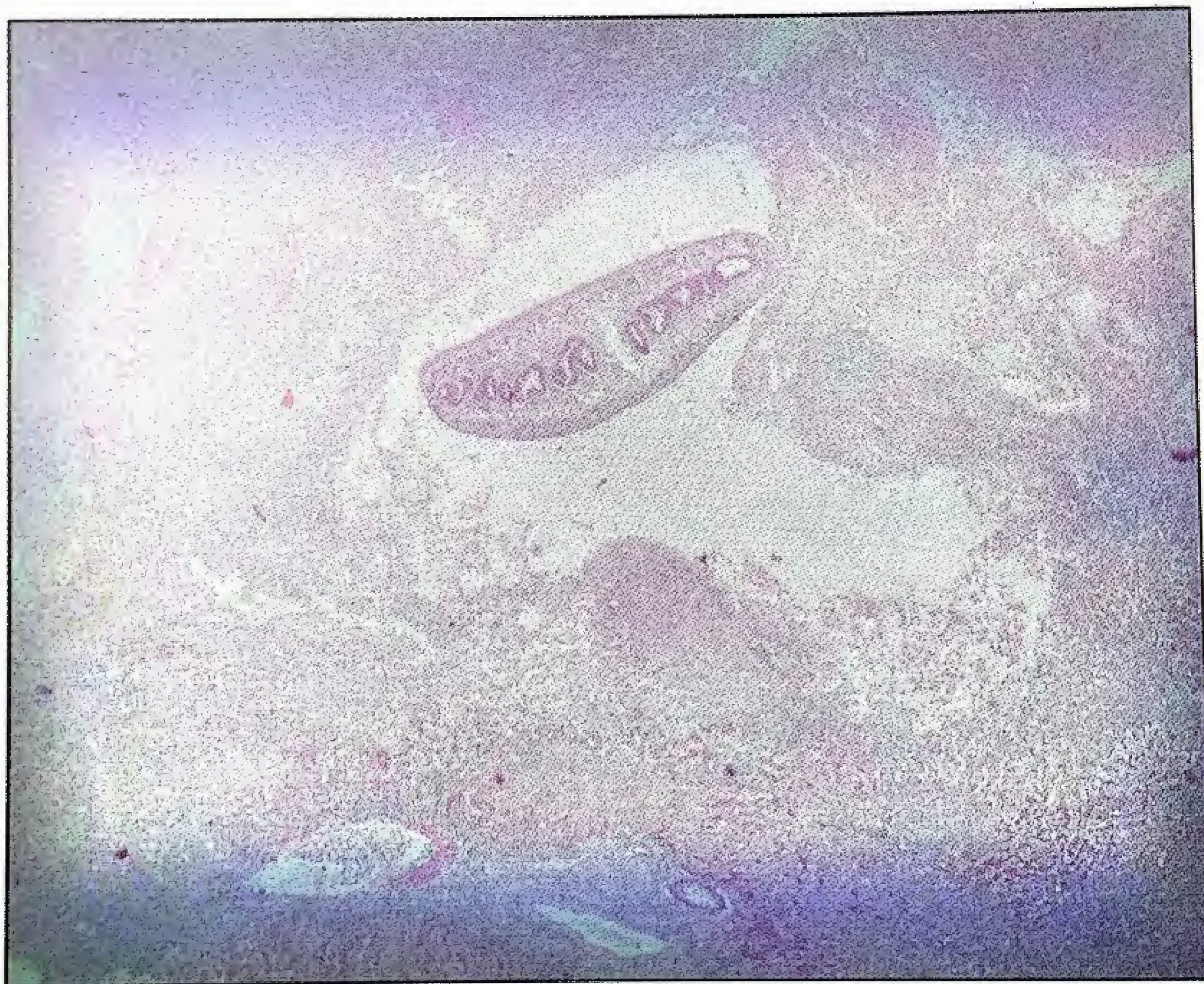




## **Fascioliasis (Hepatic distomiasis)**

- **Organ: liver**
- **Disease: Fascioliasis**
- **Stain: H&E**
- **Micro: migratory hepatic fluke  
displacing and severely destructive for  
hepatic parenchyma.**



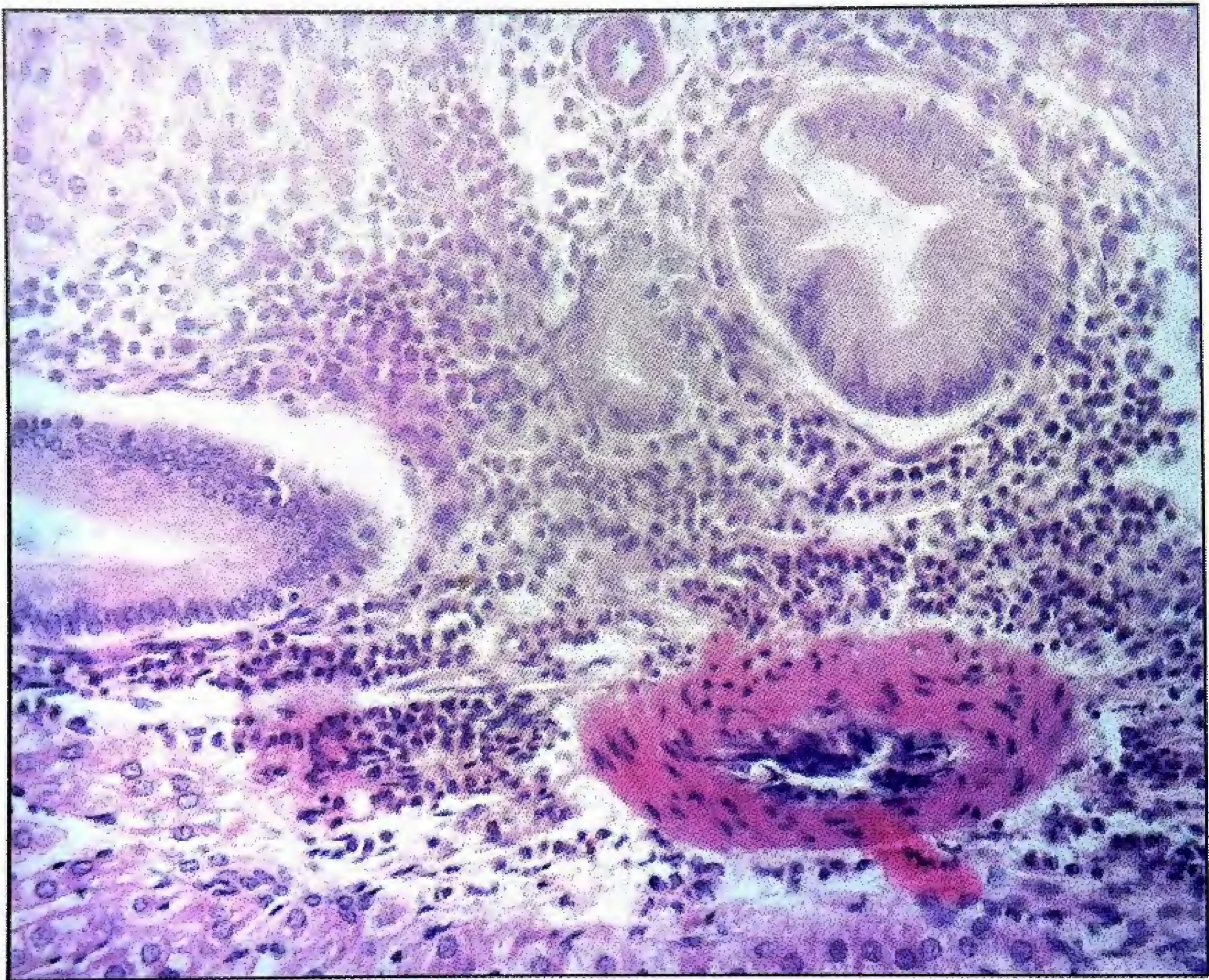




## **Fascioliasis (Hepatic distomiasis)**

- **Organ: liver**
- **Disease: Fascioliasis**
- **Stain: H&E**
- **Micro: portal area showing eosinophilic and mononuclear infiltration, hyperplasia of epithelium lining of bile duct and newly formed bile ductule. Severe periductal fibrosis.**



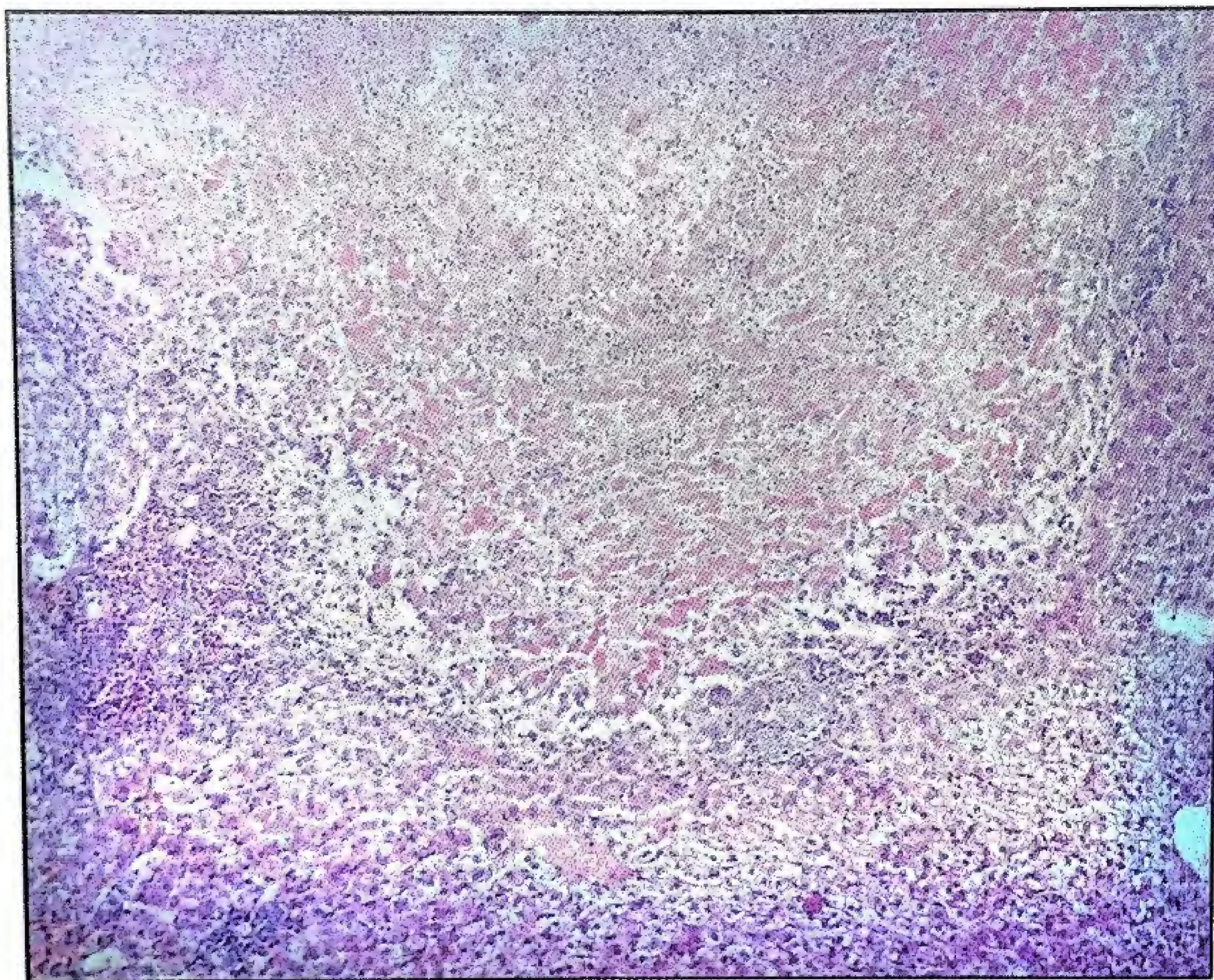




## **Fascioliasis (Hepatic distomiasis)**

- **Organ: liver**
- **Disease: Fascioliasis**
- **Stain: H&E**
- **Micro: Hepatic parenchyma showing early migratory track represented by severe necrosis and presence of fibrin threads due to migration of immature stages of fasciola hepatica.**







# **Spirocercosis**

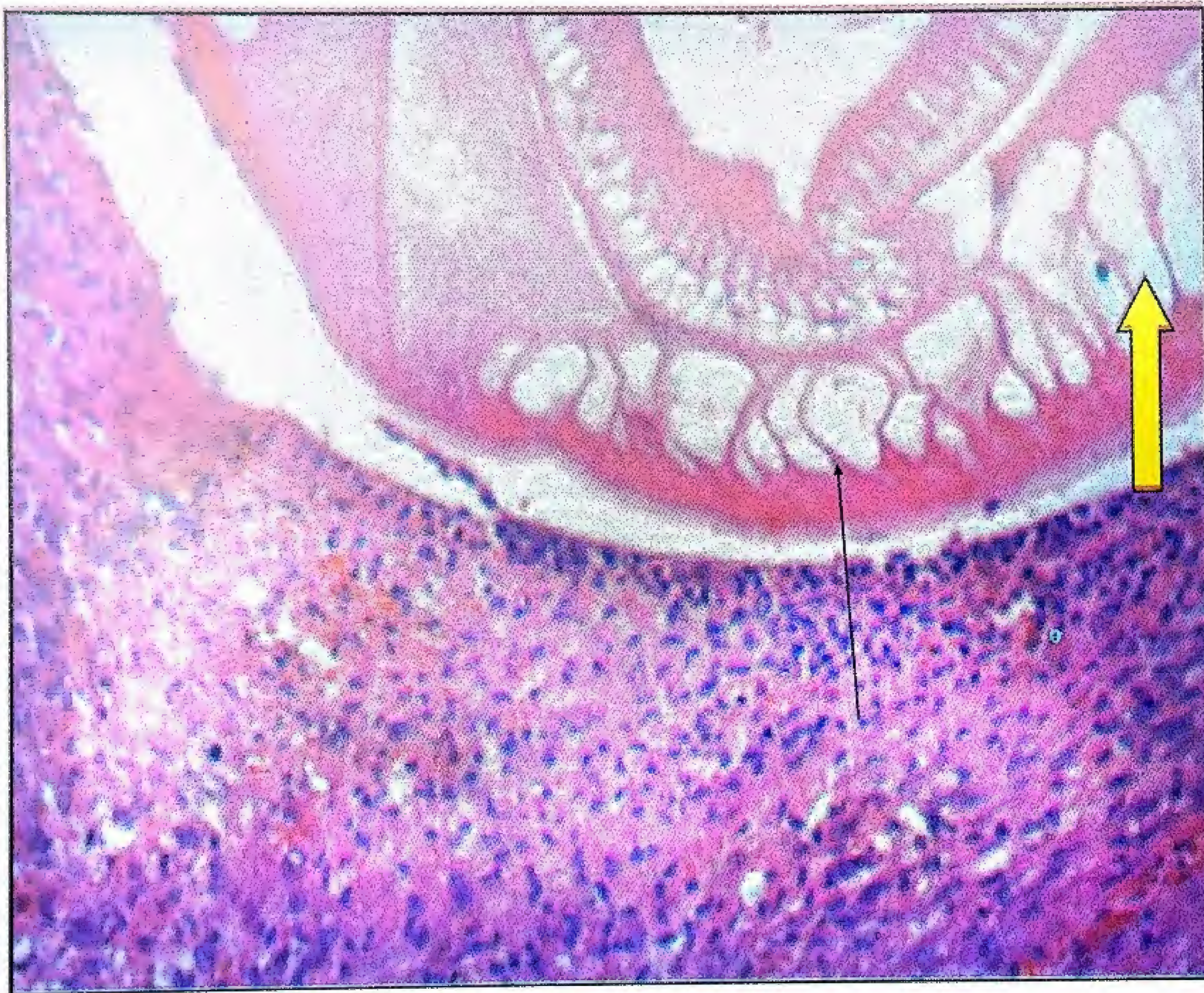
**Disease: Spirocercosis**

**Organ: Esophagus**

**Stain: H&E**

**Micro: Section through a nodule containing adult worms surrounded with fibrous tissue infiltrated with eosinophils and macrophages. Note muscle cell (arrow), lateral chord cell (Thick arrow) and cuticle**







# **Hookworms infection**

- **Organ: Intestine.**
- **Disease: Hookworms infection.**
- **Lesion: Hemorrhagic enteritis.**
- **Macro: severe hemorrhage and congestion of intestinal mucosa due to detachment of hookworm.**



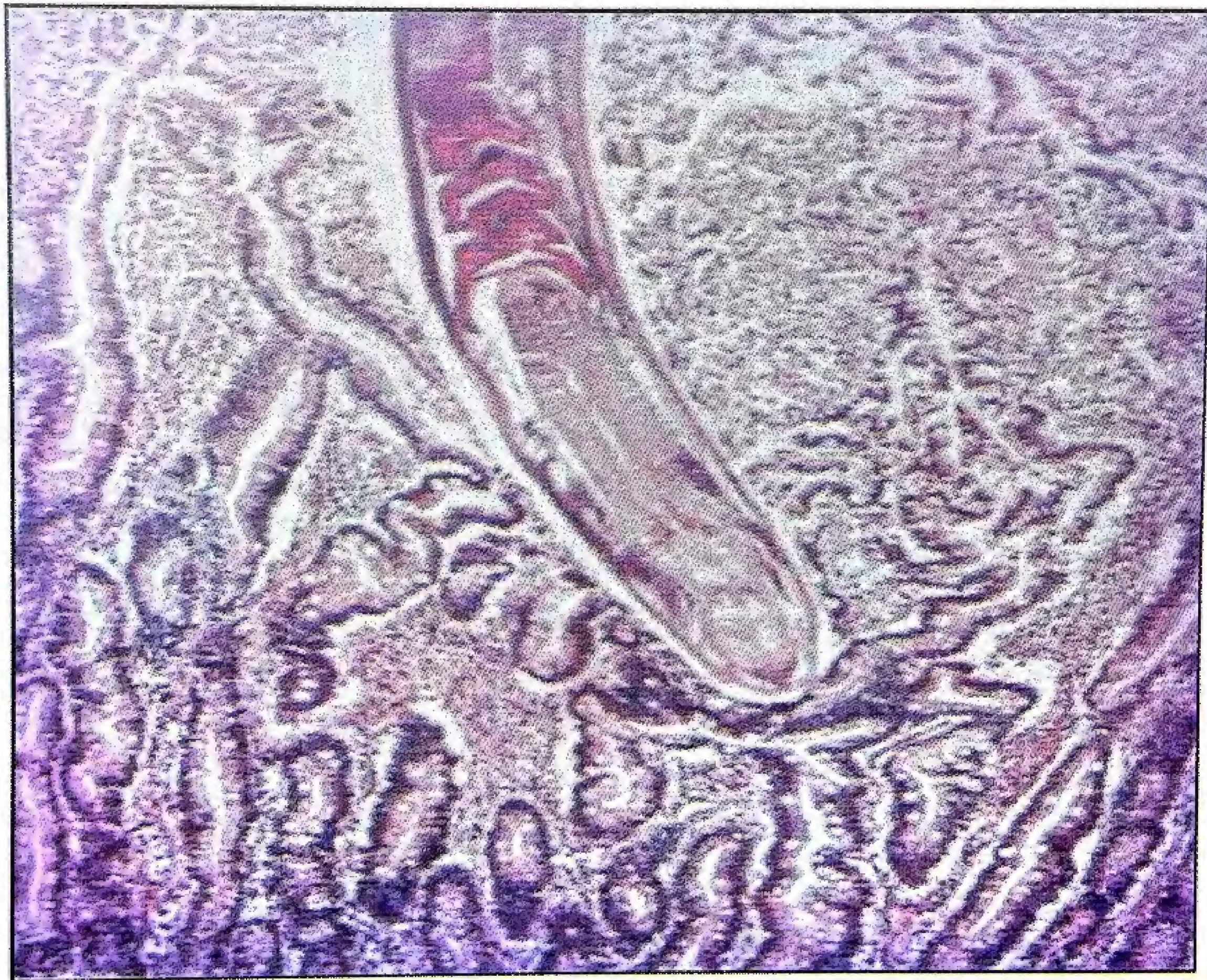




# **Hookworms infection**

- **Organ: intestine**
- **Disease: Hookworm enteritis.**
- **Stain: H&E**
- **Micro: hook worm invade intestinal mucosa.**



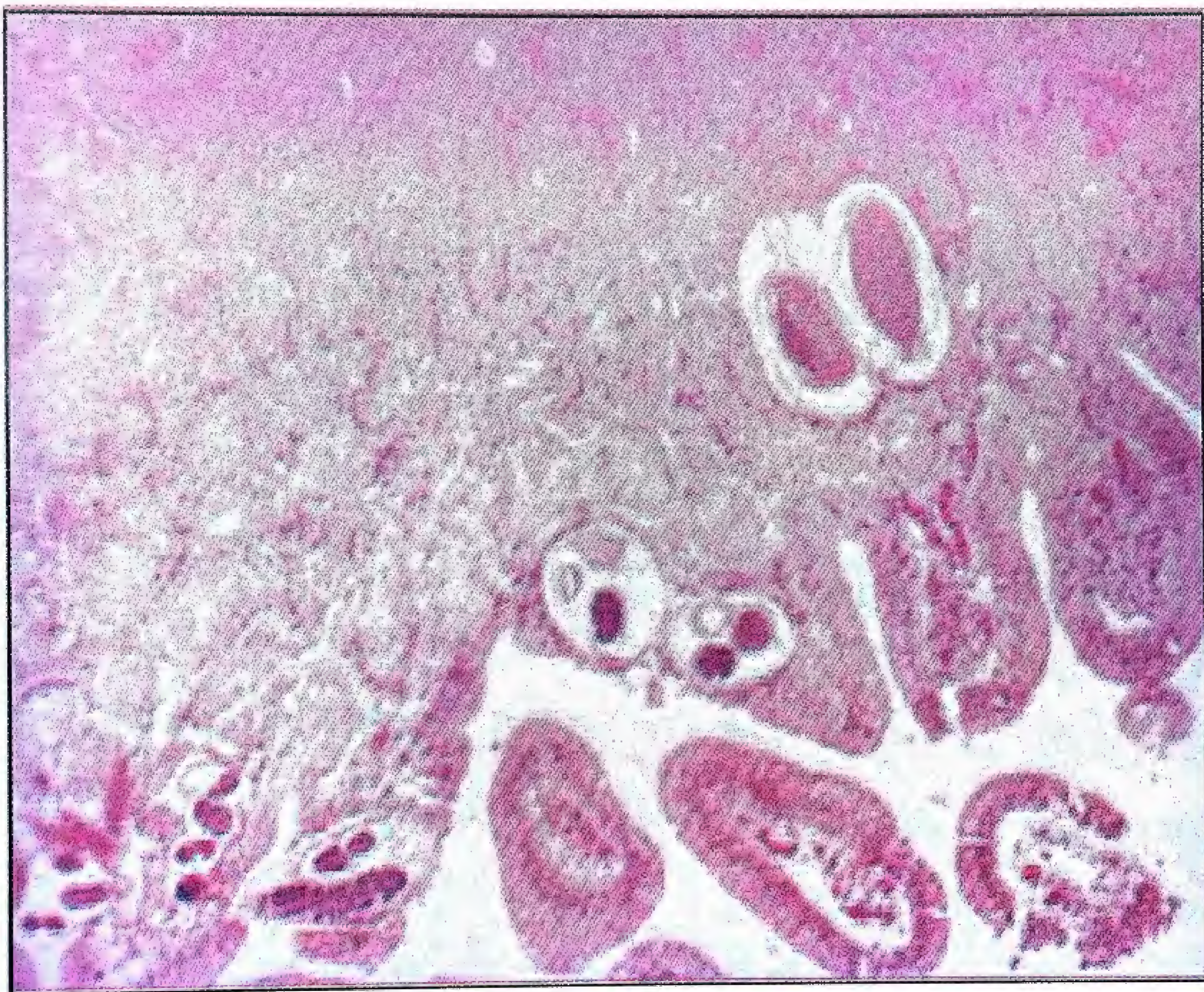




# **Strongyloidosis**

- **Organ: small intestine**
- **Disease: Strongyloidosis.**
- **Stain: H&E**
- **Micro: presence of parasite invading intestinal mucosa and marked chronic inflammatory cells infiltration mainly eosinophils.**







# Strongylosis

- **Organ: intestine**
- **Disease: Strongylosis (Verminous arteritis).**
- **Macro: Thromboemboli from sites of verminous arteritis in the cranial mesenteric artery will often lodge in end arteries of segments of the small intestine, resulting in sudden vascular occlusion and bowel infarction.**



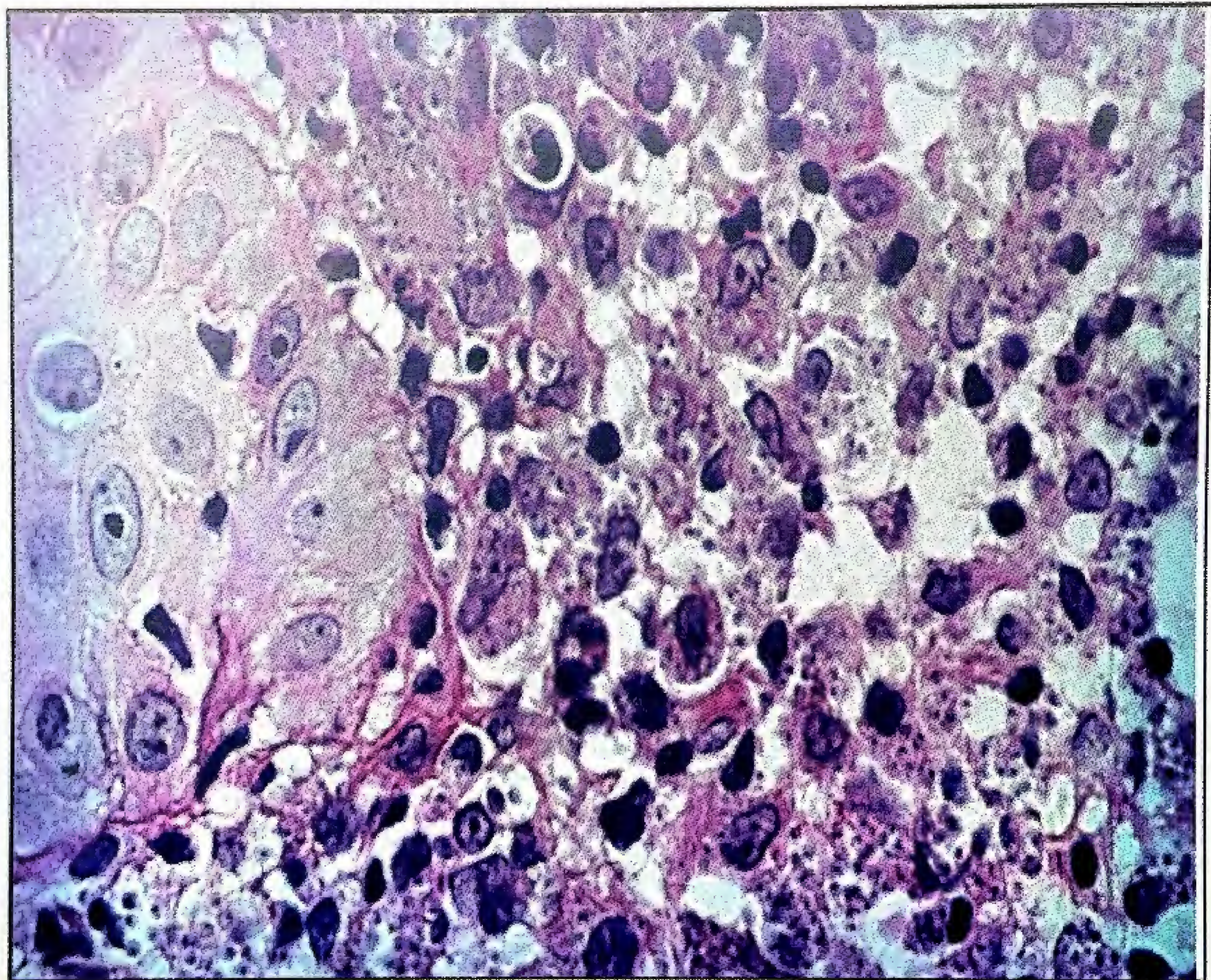




# Leishmaniasis

- Organ: Skin
- Stain: H&E
- Disease: Leishmaniasis
- Micro : Numerous amastigotes are phagocytized by macrophages in the dermis





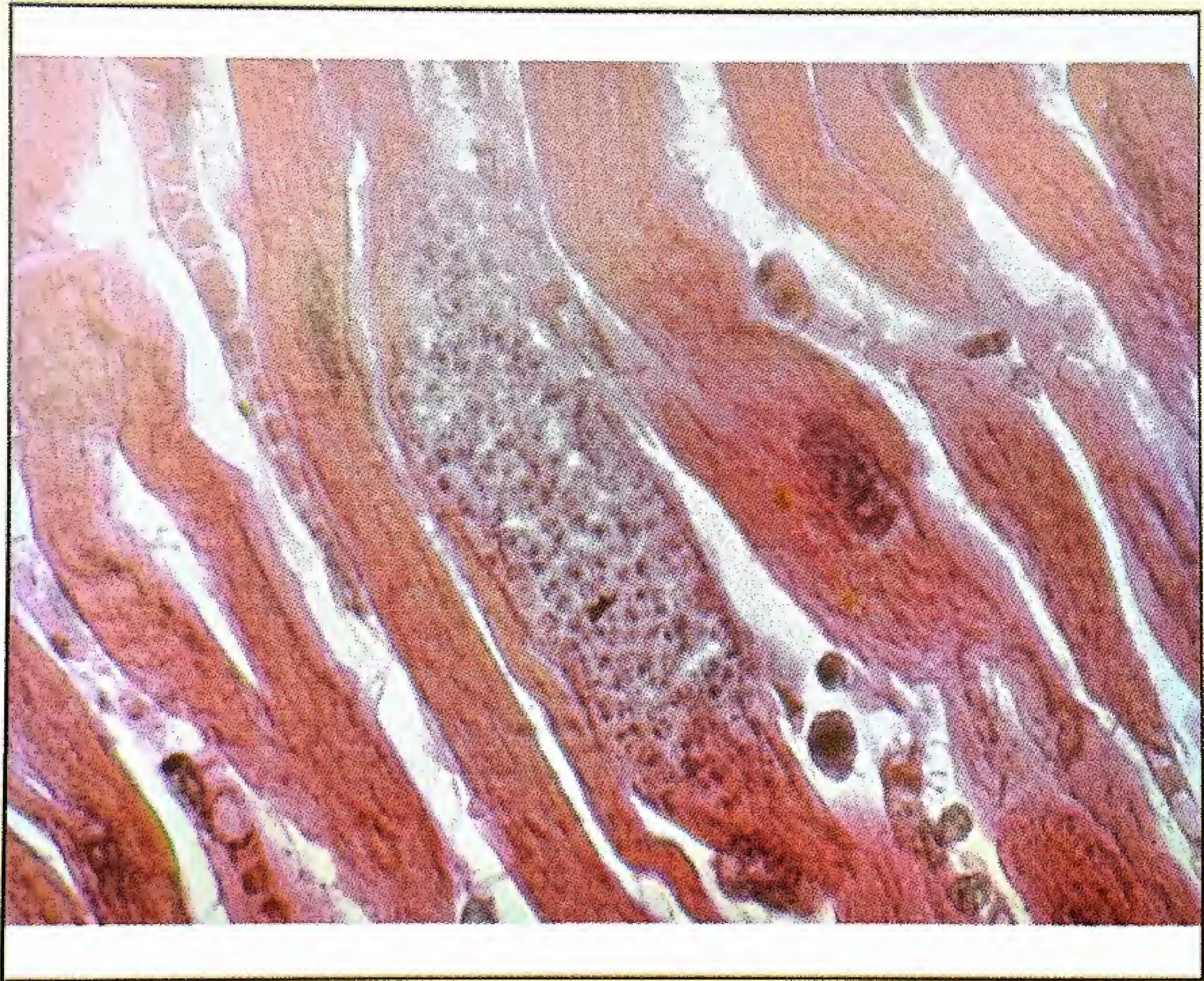


# Trypanosomiasis

## Chagas disease

- Organ: Heart
- Stain: H&E
- Disease: Trypanosomiasis (Chagas disease)
- Micro: lymphocytic infiltration is diffusely is seen in the edematous interstitium of the heart muscle.
- An infected heart muscle cell is seen in the center.







## **Demodectic mange**

**Disease: Demodectic mange**

**Organ: Skin**

**Macro: The dogs showing alopecia and  
scaling of epidermis**







## **Burrowing mites (Sarcoptic mange)**

**Disease: Burrowing mites (Sarcoptic mange)**

**Organ: Skin**

**Macro: Cattle calf showing alopecia and  
epidermal scaling**







## **Burrowing mites (Sarcoptic mange)**

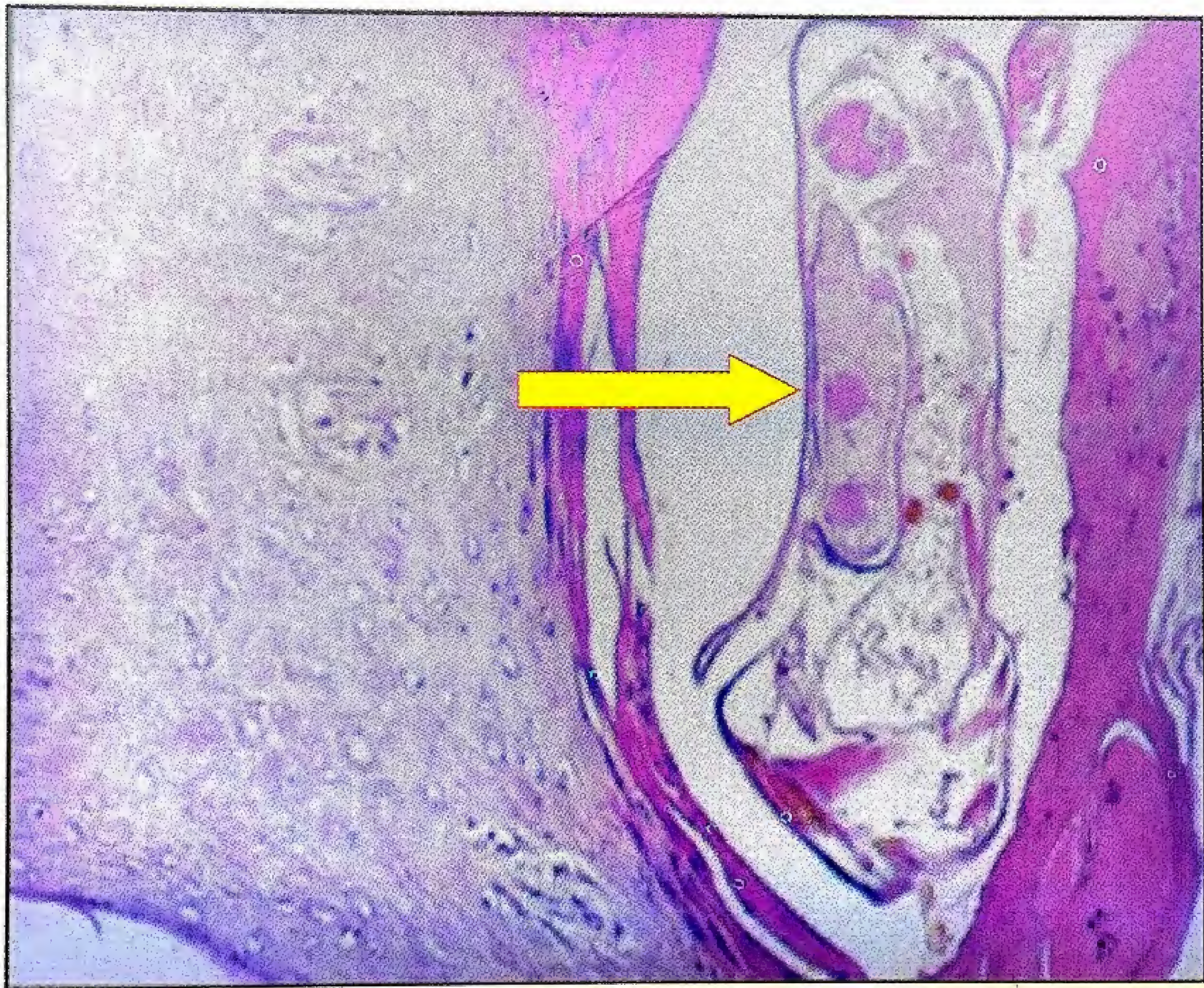
**Disease: Burrowing mites (Sarcoptic mange)**

**Organ: Skin**

**Stain: H&E**

**Micro: Adult parasite is seen in tunnel in  
the epidermis**







## **Cutaneous acariasis**

- **Organ : Skin (Rabbit)..**
- **Stain : H & E.**
- **Disease: Cutaneous acariasis**
- **Micro    Sarcoptic mange, eggs and larvae are seen in epidermal tunnels with inflammatory reaction of the underlying dermis.**



